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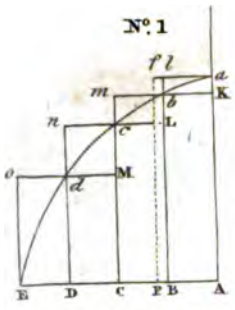

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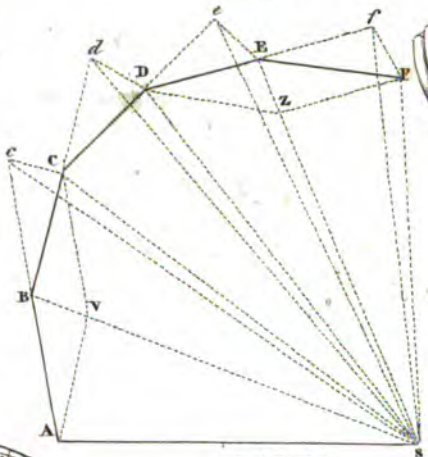

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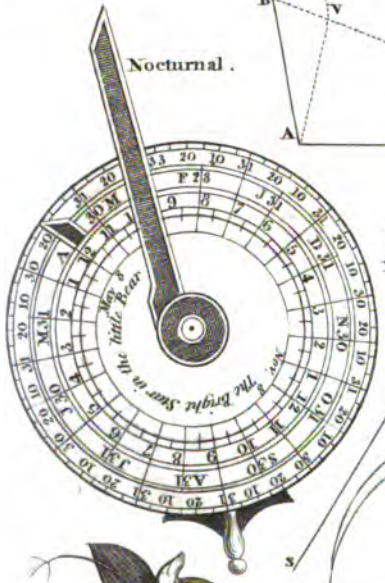

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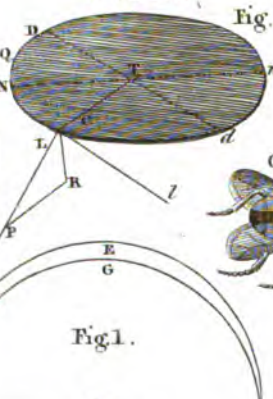

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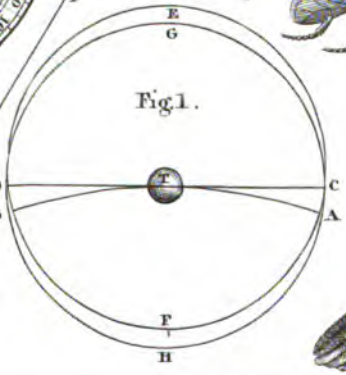
Fig. 1.



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NEREIS.

Fig. 1.

Fig. 4.

Fig. 3.

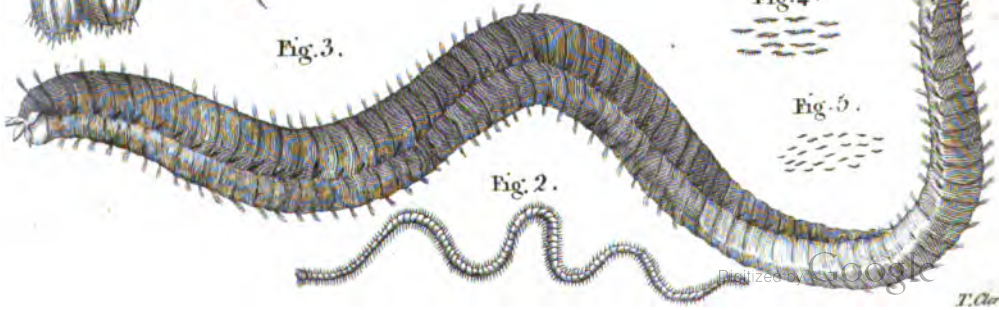

Fig. 5.

Fig. 2.

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T. Clark Sculp.

NEREIS, in zoology, a genus of animals belonging to the order of vermes molluſca. The body is oblong, linear, and fitted for creeping; it is furniſhed with lateral pencilled tentacula. There are 11 ſpecies, of which the moſt remarkable are the five following:

1. NEREIS CÆRULEA, *the blue nereis*, inhabits the ocean; where it deſtroys the ſerpulæ and teredines. See *Plate* CCXLVI, *fig.* 1.

2. NEREIS CIRROSA, the *waving nereis*. See *fig.* 2. The body is red, lumbriciform, with 65 notches, furniſhed on both ſides with two rows of briſtles. At each ſide of the head ten filaments, at the ſides of the mouth many, twice as long as the former. It dwells in Norway, on rocks at the bottom of the ſea. It vomits a red liquor, with which it tinges the water.

3. NEREIS GIGANTÆA, the *giant nereis*, is a peculiar ſpecies of thoſe large worms that make their way into decayed piles driven down into the ſea, which they bore through and feed upon, whence they are called *ſea worms*. From head to tail they are beſet on either ſide with ſmall tufts terminating in three points; which are like the fine hair pencils uſed by painters, and compoſed of ſhining briſtles of various colours. The upper part of the body in this worm is all over-covered with ſmall hairs. The rings of which it is formed are cloſely preſſed together, and yield to the touch. The 3 rows of ſmall tufts ſerve inſtead of feet, which it uſes as fiſh do their fins. See *fig* 3.

4. NEREIS LACUSTRIS, the *bog nereis*. The body of the ſize of a hog's ſhort briſtles, tranſparent, as it were articulated, and on either ſide at every articulation provided with a ſhort ſetaceous foot; interiorly it ſeems to conſiſt in a manner of oval-ſhaped articulations, and a back formed by two lines bent backwards. See *fig.* 4. It inhabits marſhes abounding in clay, where it remains under ground puſhing out its other extremity by reaſon of its continual motion. When taken out it twiſts itſelf up. It is frequent in Sweden.

5. NEREIS NOCTILUCA, the *noctilucous nereis*, inhabits almoſt every ſea, and is one of the cauſes of the luminouſneſs of the water. Theſe creatures ſhine like glow-worms, but with a brighter ſplendour, ſo as at night to make the element appear as if on fire all around. Their bodies are ſo minute as to elude examination by the naked eye. See *fig.* 5. It is ſometimes called *nereis phoſphorans*; and is thus deſcribed by Griſelin: The head is roundiſh and flat, and the mouth acuminated. The two horns or feelers are ſhort and ſubulated. The eyes are prominent, and placed on each ſide the head. The body is compoſed of about 23 ſegments or joints, which are much leſs nearer the tail than at the head. Theſe ſegments on both ſides the animal all end in a ſhort conical apex, out of which proceeds a little bundle of hairs; from under theſe bundles the feet grow in the form of ſmall flexile ſubulated ſegments deſtitute of any thing like claws. It is ſcarcely two lines long, is quite pellucid, and its colour is that of water green. They are found upon all kinds of marine plants; but they often leave them and are found upon the ſurface of the water: they are frequent at all ſeaſons, but eſpecially in ſummer before ſtormy weather, when they are more agitated and more luminous. Their numbers, and wonderful agility, added to their pellucid and ſhining quality, do not a little contribute to their illuminating the ſea, for myriads of thoſe animalculæ may be contained in the portion of a ſmall cup of ſea-water. Innumerable quantities of them lodge in the cavities of the ſcales of fiſhes, and to them probably do the fiſhes owe their noctilucous quality. "I have obſerved with great attention (ſays Barbut) a fiſh juſt caught out of the ſea, whoſe body was almoſt covered with them, and have examined them in the dark: they twiſt and curl themſelves with amazing agility, but ſoon retire out of our contracted ſight; probably their glittering numbers dazzling the eye, and their extreme minuteneſs eluding our reſearches. It is to be obſerved, that when the unctuous moiſture which covers the ſcales of fiſhes is exhauſted by the air, theſe animales are not to be ſeen; nor are the fiſhes then noctilucous, that matter being perhaps their nouriſhment when living, as they themſelves afford food to many marine animals. They do not ſhine in the day-time, becauſe the ſolar rays are too powerful for their light; however aggregate or immenſe their number." Their appearance is particular-

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ly brilliant when the wind is in the E. and SE. points, and in the winter nights preceded by a warm day. If water containing theſe animalcules be kept warm, they retain their light two whole days after they are dead; but in cold water loſe it in 8 hours: motion and warmth, which increaſe their vivacity and ſtrength, increaſe their light alſo.

NERENBERG, a town of France, in the dep. of the Rhine and Moſelle, and late archbiſhopric of Cologn: 26 miles W. of Coblentz, and 32 S. of Cologn.

NERESHEIM, a town of Suabia in Oettingen, with a princely abbey; 6 m. SW. of Nordlingen.

NERESI, a town of Maritime Auſtria, in the S. ſide of the iſle of Drazza.

NERESTABLE, a town of France, in the dep. of the Rhone and Loire; 12 m. SW. of Roanne.

NEREUS, in mythology, a marine deity, the ſon of Oceanus and Tethys. He ſettled in the Ægean Sea, was conſidered as a prophet, and had the power of aſſuming what form he pleaſed. He married his ſiſter Doris, by whom he had 50 daughters called NEREIDS, who conſtantly attended on Neptune, and when he went abroad ſurrounded his chariot.

NERHELBENO, a town of Poland in Kiow.

(1.) NERI, Anthony, a learned man, who wrote a curious book, printed at Florence in 1612, in 4to, entitled *Dell' Arte verraria libri VII.*

(2.) NERI, St Philip DE, founder of the congregation of the ORATORY in Italy, was born of a noble family at Florence, on the 25th of July 1515. Educated in the principles of piety and learning, he ſoon became diſtinguiſhed for his knowledge and virtue. At the age of 19 he went to Rome, where he aſſiſted the ſick, and gave many proofs of ſelf-denial and humility. Being raiſed to the prieſthood at the age of 36, he inſtituted, in 1550, a fellowſhip in the church of St Saviour del Campo, for the relief of poor foreigners, pilgrims, and convaleſcents, who had no place whither they could retire. This ſociety was the cradel of the CONGREGATION OF THE ORATORY. Having gained over Salviati, brother to the cardinal, Tarugio, afterwards cardinal, the celebrated Baronius, and others, they began to form a ſociety in 1564. The ſpiritual exerciſes had been transferred, in 1558, to the church of St Jerom de la Charité, which Philip did not leave till 1574, when he went to ſtay at St John of the Florentines. Pope Gregory XIII. gave his approbation of the congregation in 1575. The order ſoon ſpread throughout Italy. No vow is taken; charity is the only bond of connection. The general continues only three years in office, and his orders are not deſpotic. The founder died at Rome on the 26th May 1595, aged 80. He had reſigned the generalſhip in 1592, in favour of Baronius. The conſtitutions which he left were not printed till 1612. The principal employment, which he allots to the prieſts, is to give, every day, in their oratory or church, inſtructions ſuited to their hearers. Philip was canoniſed in 1622, by Gregory XV.

(3.) NERI, Thomas, a Dominican, who employed his pen in defence of his fellow monk, the famous Savonarole.

NERICIA, or NERIKE', a province of Sweden, about 60 miles long, and 48 broad; bounded on the N. by Weſtmanland, E. by Suderman, S. by Eaſt and Weſt Gothland, and W. by Warmeland. The ſoil is fertile, in corn and paſture. The hills abound with wood, iron, alum, lime-ſtone, ſulphur, &c. Arms and hardware are the chief manufactures. There are 23 lakes and ſeveral rivers. OREBRO is the capital.

NERIGLISSAR, the 4th king of Babylonia, was ſon-in-law of Nebuchadnezzar, and ſucceeded Evil-Merodach. See BABYLONIA, § 3.

NERIKE' See NERICIA.

NERILKERY, a town of Indoſtan, in Myſore.

NERIS, a town of France, in the dep. of Allier, with a mineral ſpring; 3 miles SE. of Mont-Luçon.

NERISSI, or NERESI. See NERESI.

NERITA, a genus of ſhell fiſh, of the nature of the ſemicircular mouthed COCHLEÆ, comprehended under the cochleæ ſemilunares.

NERITIS. See LEUCADIA.

NERITOS, a mountain of Ithaca; whence the iſland is alſo often called *Neritos*; and Ulyſſes *Neritius dux. Virg Æn.* iii, 271.

NERITUM, an ancient town of Italy, in Calabria, now called NARDO.

(I,) NERIUM. a promontory of Spain, now called CAPE FINISTERRE.

(II.) NERIUM, in botany, OLEANDER, or ROSE BAY, a genus of the monogynia order, belonging to the pentandria claſs of plants; and in the natural method ranking under the 30th order, *Contortæ*. It is called *nerium*, from νηρος *humid*, becauſe the plants grow in moiſt places. There are two erect follicles; the ſeeds plumy; the tube of the corolla terminated by a lacerated crown. Its peculiar characters are theſe; the empalement of the flower is permanent, and cut into 5 acute ſegments; the flower has one funnel-ſhaped petal, cut into 5 broad obtuſe ſegments, which are oblique; it hath a nectarium, terminating the tube, which is torn into hairy ſegments; it hath 5 ſhort awl-ſhaped ſtamina within the table; it hath an oblong germen, which is bifid, with ſcarce any ſtyle, crowned by ſingle ſtigmas; the germen afterwards turns to two long, taper, acute-pointed pods, filled with oblong ſeeds lying over each other like the ſcales of a fiſh, and crowned with down. There are 5 ſpecies, all natives of warm climates. The moſt remarkable are theſe:

1. NERIUM ANTIDYSINTERICUM, a native of Ceylon. The bark is an article of materia medica, under the name of *Coneſſi*.

2. NERIUM OLEANDER, *South Sea roſe*, a beautiful ſhrub, cultivated in gardens on account of its flowers, which are of a fine purple, and in cluſters. The whole plant is poiſonous, and eſpecially the bark of the roots. Oleanders are generally propagated by layers in this country; for although they will take root from cuttings, yet that being an uncertain method, the other is generally preferred; and as the plants are very apt to produce ſuckers or ſhoots from their roots, theſe are beſt adapted for laying; for the old branches will not put out roots: when theſe are laid down, they ſhould be ſlit at a joint, in the ſame manner as is practiſed in laying carnations.

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There are few plants which are equal to them either to the ſight or ſmell, for their ſcent is very like that of the flowers of the white thorn; and the bunches of flowers will be very large if the plants are ſtrong. The plant has a force which is inſuperable; for its juice excites ſo great and violent an inflammation, as immediately to put a ſtop to deglutition; and if it be received into the ſtomach, that part is rendered incapable of retaining any thing; the pernicious drug exerting its force, and purging both upwards and downwards. The *Nerium Oleander* in qualities reſembles the *apocynum*. See APOCYNUM. But when handled and examined upon an empty ſtomach, in a cloſe chamber, it cauſes a gradual numbneſs, with a pain in the head; which ſhows that ſomething poiſonous belongs even to the ſmell, though there is no danger, if it be received in the open air. Antidotes ſaid to be good againſt its poiſon are vinegar and all acids.

3. NERIUM TINCTORUM, a new ſpecies, with beautiful blue flowers, lately diſcovered by Dr. Roxburgh at Madras. A decoction of the leaves, with an addition of lime-water, makes an indigo of fine quality.

(1.) NERO, Claudius Domitius Cæſar, the 6th emperor of Rome, and the laſt of the family of the Cæſars, was the ſon of Caius Domitius Ahenobarbus and Agrippina, the daughter of Germanicus. He was adopted by the emperor Claudius, A. D. 50, and four years after ſucceeded him. In the beginning of his reign he aſſumed the appearance of the greateſt kindneſs, condeſcenſion, affability, complaiſance, and humanity. The object of his adminiſtration ſeemed to be the good of his people; and when he was deſired to ſign his name to a liſt of malefactors that were to be executed, he exclaimed, *Would to heaven I had never learned to write!* When the ſenate had liberally commended the wiſdom of his government, he deſired them to keep their praiſes till he deſerved them. Theſe apparent virtues, however, proved to be artificial: Nero ſoon diſplayed the real propenſities of his nature. He delivered himſelf from the ſway of his mother, and at laſt ordered her to be murdered. Many of his courtiers ſhared her unhappy fate; and Nero ſacrificed to his fury or caprice all who obſtructed his pleaſure or inclination. In the night he generally went from his palace to viſit the meaneſt taverns, and all the ſcenes of debauchery which Rome contained. In theſe nocturnal riots he inſulted the people in the ſtreets; and his attempts to offer violence to the wife of a Roman ſenator nearly coſt him his life. He alſo turned actor, and appeared publicly on the Roman ſtage. To excel in muſic, and to conquer the diſadvantages of a hoarſe diſagreeable voice, he moderated his meals, and often paſſed the day without eating. He next went into Greece, and preſented himſelf a candidate at the Olympic games. He was defeated in wreſtling; but the flattery of the ſpectators adjudged him the victory, and he returned to Rome with all the pomp and ſplendour of an eaſtern conqueror, drawn in the chariot of Auguſtus, and attended by a band of muſicians, actors, and ſtage-dancers. Theſe amuſements, however, were comparatively innocent; but his conduct ſoon became abominable. He diſguiſed himſelf in the habit of a woman, and was publicly married to one of his eunuchs. This violence to nature and decency was ſoon exchanged for another: Nero reſumed his ſex, and celebrated his nuptials with one of his meaneſt catamites: and on this occaſion a Roman wit obſerved, that the world would have been happy if Nero's father had had *ſuch a wife*. His cruelty was now diſplayed in a ſtill higher degree; for he ſacrificed his wife Octavia Poppæa, and the celebrated writers, Seneca, Lucan, Petronius, &c. He had heard of the burning of Troy: to repreſent that diſmal ſcene, he cauſed Rome to be ſet on fire in different places. The conflagration became ſoon univerſal, and during 9 ſucceſſive days the fire continued. All was deſolation: nothing was heard but the lamentations of mothers whoſe children had periſhed in the flames, the groans of the dying, and the continual fall of palaces and buildings. Nero was the only one who enjoyed the general conſternation. He placed himſelf on the top of a high tower, and played on his lyre, while he ſung the deſtruction of Troy; a dreadful ſcene which his barbarity had realiſed before his eyes. He attempted to avert the public odium from his head, by a pretended commiſeration of the miſeries of his ſubjects, and by throwing the blame of the fire on the Chriſtians; which gave riſe to the firſt dreadful perſecution, wherein St Peter and Paul ſuffered. Nero began to repair the ſtreets and the public buildings at his own expenſe. He built a celebrated palace, which he called his golden houſe. It was liberally adorned with gold, with precious ſtones, and with every thing rare and exquiſite. It contained ſpacious fields, artificial lakes, woods, gardens, orchards, and whatever exhibited a beautiful ſcene. The entrance of this edifice admitted a large coloſſus of the emperor, 120 feet high, which Pliny ſays was afterwards deſtroyed by lightning: the galleries were each a mile long, and the whole was covered with gold. The roofs of the dining halls repreſented the firmament, in motion as well as in figure; and continually turned round night and day, ſhowering down all ſorts of perfumes and ſweet waters. This grand edifice, according to Pliny, extended all round the city. When he went a-fiſhing, his nets were of gold and ſilk. He never appeared twice in the ſame garment; and when he took a voyage, there were thouſands of ſervants to take care of his wardrobe. This continuation of debauchery, extravagance, and cruelty, at laſt rouſed the people. Many conſpiracies were formed againſt him; but they were generally diſcovered, and the conſpirators ſuffered the ſevereſt puniſhments. The moſt dangerous one was that of Piſo, from which he was ſaved by the confeſſion of a ſlave. The conſpiracy of Galba proved more ſucceſsful, who, when he learned that his plot was known to Nero, declared himſelf emperor. The unpopularity of Nero favoured his cauſe; he was acknowledged by all the Roman empire; and the ſenate condemned the tyrant to be dragged naked through the ſtreets of Rome, whipped to death, and afterwards to be thrown down from the Tarpeian rock like the meaneſt malefactor. This, however, Nero prevented, by killing himſelf, A. D.

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68, in the 32d year of his age, after a reign of 13 years and 8 months. Rome was filled with acclamations at it; and the citizens, more ſtrongly to indicate their joy, wore caps, ſuch as were generally uſed by ſlaves who had received their freedom. See ROME. The name of *Nero* has been ever ſince uſed emphatically to expreſs a barbarous and bloody tyrant.

(2.) NERO, in geography, an iſland in the Eaſt Indian Ocean, the 2d of the BANDA iſlands. The Dutch have a ſettlement in it, called *Fort Naſſau*. It abounds with ſerpents, very large, but not venomous. The mountains are covered with trees, which are frequented by very rare birds. Lon. 129. 45. E. Lat. 4. 40. N.

NERON, or } a town of France, in the dep. of
NERONDE, } Rhone and Loire, 26 miles W. of Lyons, and 15 NNE. of Montbriſon.

NERONDOS, a town of France, in the dep. of Cher, 17 miles ESE. of Bourges.

NERONIA, a name given by Tiridates, king of Armenia, to ARTAXATA, his capital, in compliment to Nero, who had reſtored him to his kingdom.

NERSTEIN, a town of Germany, in the late palatinate of the Rhine, now annexed to France, and included in the dep. of Mont Tonnere; one mile N. of Oppenheim.

NERSTIN, a town of Courland.

NERTCHA, a river of Ruſſia, running into the Amur, near Nertchinſk.

(1.) NERTCHINSK, an extenſive province of Ruſſia, in Irkutſk, bordering on China. It is mountainous, but abounds with fine paſture, and rich mines of gold, ſilver, and lead.

(2.) NERTCHINSK, the capital of the above province, was built in 1658, on the borders of China, between the *Nertcha* and the *Shinke*, whence the name. It has a fort with 32 braſs guns and one of iron. A treaty of peace, between Ruſſia and China, was concluded in it in 1689; and the two nations live in great cordiality.

NERVA, Cocceius, an excellent Roman emperor, who ſucceeded Domitian, the laſt of the 12 Cæſars. He was a native of Narnia in Umbria; but his family was originally of Crete. Dio Caſſius ſays he was born on the 17th of March, in the 18th year of Tiberius, A. D. 32. Nero, in the 12th year of his reign, made him prætor, and erected a ſtatue for him in the palace on account of his poems (for he was one of the beſt poets of his age), ſome of which were inſcribed to him. He was conſul in 71 with Veſpaſian, and in 90 with Domitian. Authors uniformly celebrate him as a prince of a moſt mild and humane temper, of great moderation and generoſity, who looked on his office as emperor, not as if it was for his own advantage, but for that of his people; and whilſt he reigned, he made the happineſs of his ſubjects his only purſuit. He narrowly eſcaped death under Domitian. The Romans unanimouſly choſe him emperor; and they had no cauſe to repent of their choice. An inſtance of his great lenity appears in his pardoning Calpurnius Craſſus, who conſpired againſt him. In ſhort, he omitted nothing that might contribute to the reſtoring of the empire to its former luſtre; recalling thoſe who had been baniſhed for religion, and redreſſing all grievances. Finding his ſtrength failing, he conferred an additional benefit on the Romans by adopting TRAJAN. He died A. D. 98. He was the firſt Roman emperor of foreign extraction.

(1.) * NERVE. *n. ſ.* [*nervus*, Latin; *nerf*, French.] 1. The organs of ſenſation paſſing from the brain to all parts of the body.—The *nerves* do ordinarily accompany the arteries through all the body; they have alſo blood veſſels, as the other parts of the body. Wherever any *nerve* ſends out a branch, or receives one from another, or where two *nerves* join together, there is generally a ganglio or plexus. *Quincy.*—

Take any ſhape but that, and my firm *nerves*
Shall never tremble. *Shak. Macbeth.*

2. It is uſed by the poets for ſinew or tendon.—

If equal powers
Thou wouldſt inflame, amids my *nerves*, as then
I could encounter with three hundred men.
Chapman.

Strong Thraſymed diſcharg'd a ſpeeding blow
Full on his neck, and cut the *nerves* in two.
Pope.

(2.) *The* NERVES, in anatomy, are ſmall white gliſtening cords, proceeding from the brain and ſpinal marrow, and dividing into very ſmall branches, which are ſent off throughout all parts of the body, and which are found to be the organs of ſenſation and motion. See ANATOMY, *Index.*

NERVEA VIS. See ANATOMY, *Index.*

* NERVELESS. *adj.* [from *nerve.*] Without ſtrength.—

There ſunk Thalia, *nerveleſs*, faint, and dead,
Had not her ſiſter Satire held her head. *Pope.*

NERUI, a town of Italy, 5 miles SE. of Genoa.

NERVIEUX, a town of France, in the dep. of Rhone and Loire; 10 miles N. of Montbriſon.

NERVII, an ancient brave nation of Gallia Belgica, who attacked Julius Cæſar, but were defeated. They poſſeſſed the country lately called HAINAULT.

NERVIO, a river of Spain, in Biſcay, which runs into the ſea 2 miles below Bilboa. It is called YBAI-CABAL by the natives.

NERVOSA VIS. See ANATOMY, *Index.*

NERUKA, a ſea-port of Cape Breton.

(1.) * NERVOUS. *adj.* [*nervous*, Lat.] 1. Well ſtrung; ſtrong; vigorous.—

What *nervous* arms he boaſts! how firm his tread!
His limbs how turn'd! *Pope's Odyſſey.*

2. Relating to the nerves; having the ſeat in the nerves.—

The venal torrent, murm'ring from afar,
Whiſper'd no peace to calm this *nervous* war.
Harte.

3. [In medical cant.] Having weak or diſeaſed nerves.—Poor, weak, *nervous* creatures. *Cheyne.*

(2.) NERVOUS FLUID. See ANATOMY, § 516, 518.

* NERVY. *adj.* [from *nerve.*] Strong; vigorous. Not in uſe.—

Death, that dark ſpirit, in his *nervy* arm doth lie. *Shak.*

NES, a river of Denmark, in Zealand.

NESA, a town of Perſia, in Choraſan.

NES-

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NESACTUM, an ancient town of Iſtria; now called CASTEL NUOVO.

NESBIT, Thomas, an eminent Scottiſh antiquarian, born at Edinburgh in 1672. He was the ſon of Lord Preſident Neſbit, and wrote a book on Heraldry, and a *Vindication of Scottiſh Antiquities*, which is ſtill in MS. in the Advocates Library at Edinburgh. He died in 1725.

* NESCIENCE. *n. ſ.* [from *neſcio*, Latin.] Ignorance; the ſtate of not knowing.—Many of the moſt accompliſhed wits of all ages have reſolved their knowledge into Socrates his ſum total, and after all their pains in queſt of ſcience, have ſat down in a profeſſed *neſcience*. *Glanville's Scepſis*.

(1.) NESCOPEK, a river of Pennſylvania, which falls into the NE. branch of the Suſquehanna, in Northumberland county.

(2.) NESCOPEK, a mountain of Pennſylvania.

* NESH. *adj.* [*neſe*, Saxon.] Soft; tender; eaſily hurt. *Skinner*.

NESIGODA, a lake of Sileſia, in Oels.

NESIRBAD, a town of Perſia, in Farſiſtan; 69 miles SSE. of Schiras.

NESIS, an iſland of Italy, on the coaſt of Campania; now called Niſita.

(1.) NESLE, a town of Egypt, on a canal.

(2.) NESLE, a town of France, in the dep. of Somme, on the Lingon; 10 miles S. of Peronne, and 26 E. of Amiens. Lon. 2, 57. E. Lat. 49. 61. N.

NESLOUR, an iſland in the Perſian gulph.

NESMELL, a town of Hungary.

NESPEREIRA, a town of Spain, in Galicia; 12 miles N. of Tuy.

(1.) * NESS. 1. A termination added to an adjective to change it into a ſubſtantive, denoting *ſtate* or *quality*; as, *poiſonous, poiſonouſneſs; turbid, turbidneſs; lovely, lovelineſs*; from *niſſe*, Saxon.—2. The termination of many names of places where there is a headland or promontory; from *neſs*, Saxon, a *noſe of land*, or headland; as INVERNESS.

(2.) NESS, a town of Norway, in Aggerhuys.

(3.) NESS, a river of Scotland, in Inverneſsſhire, which flows from the E. extremity of Loch Ness, runs E. for 6 miles, and falls into the Frith of Moray, a little below Inverneſs, of which its æſtuary forms the harbour. It is 8 miles long in all, has a beautiful iſland in its middle, and never overflows its banks. It abounds with ſalmon, trouts, and flounders. The Berwick fiſhing company have had a tack of it theſe 50 years. The quantity of ſalmon caught annually is about 350 barrels.

(4.) NESS, LOCH. See LOCH NESS.

NESSE, an iſland of E. Frieſland, in the Ems; one mile N. of Ort.

NESSELROD, a town of Germany, in Berg.

(1.) NESSUS, in fabulous hiſtory, a celebrated centaur, ſon of Ixion and the Cloud. He offered violence to Dejanira, whom Hercules had entruſted to his care, with orders to carry her acroſs the river Evenus. Hercules ſaw the diſtreſs of his wife from the oppoſite ſhore, and immediately let fly one of his poiſonous arrows, which ſtruck the centaur to the heart. Neſſus, as he expired, gave the tunic he then wore to Dejanira, aſſuring her, that from the blood which had flowed from his wounds, it had received the power of recalling a huſband from unlawful love. Dejanira received it with pleaſure, and this mournful preſent cauſed the death of HERCULES.

(2.) NESSUS, a river which ſeparates Thrace from Macedonia. It is alſo called NESUS, NESTOS, and NESTUS; now NESTO.

(1.) * NEST. *n. ſ.* [*neſt*, Saxon.] 1. The bed formed by the bird for incubation and feeding her young.—If a bird's *neſt* chance to be before thee in the way, thou ſhalt not take the dam with the young. *Deut.* xxii. 6.—

Th' example of the heav'nly lark,
Thy fellow poet, Cowley, mark;
Above the ſkies let thy proud muſick ſound,
Thy humble *neſt* build on the ground. *Cowley.*

2. Any place where the animals are produced.—Redi found that all kinds of putrefaction did only afford a *neſt* and aliment for the eggs and young of thoſe inſects he admitted. *Bentley.* 3. An abode; place of reſidence; a receptacle. Generally in a bad ſenſe: as, a *neſt* of rogues and thieves.—

Come from that *neſt*
Of death, contagion, and unnat'ral ſleep. *Shak.*

4. A warm cloſe habitation, generally in contempt.—Some of our miniſters having livings offered unto them, will neither, for zeal of religion, nor winning ſouls to God, be drawn forth from their warm *neſts*. *Spenſer.* 5. Boxes or drawers; little pockets or repoſitories.

(2.) NEST. See NIDUS.

(3.) NEST, EATABLE BIRDS. See BIRDS NESTS, § 4; and HIRUNDO, N° 7.

* *To* NEST. *v. n.* [from the noun,] To build neſts.—The cedar ſtretched his branches as far as the mountains of the moon, and the king of birds *neſted* within his leaves. *Howel.*

NESTE, a river of France, which runs into the Garonne at Monreal.

* NESTEGG. *n. ſ.* [*neſt* and *egg*.] An egg left in the neſt to keep the hen from forſaking it.—

Books and money laid for ſhew,
Like *neſtiggs*, to make clients lay. *Hudibras.*

NESTES, a ci-devant territory of France, now included in the dep. of Upper Pyrenees. Barthe was the capital.

NESTIER, a town of France, in the dep. of Upper Pyrenees; 4 miles E. of Barthe.

(1.) NESTING, a pariſh of Scotland, in Shetland, comprehending the united pariſhes of NESTING, *Lunneſting*, WHALSAY, and the SKERRIES; including *Foula* and Fair Iſle. The population in 1793 was 1800; the increaſe ſince 1755, 631; erroneouſly ſtated in Sir John Sinclair's *Statiſtical Account* at only 366. The people are chiefly employed in the fiſheries of ling, cod, tuſk, piltocks, and ſillocks. They are remarkably humane to thoſe who have the miſfortune to be ſhipwrecked on their coaſts. Agriculture is in a low ſtate, and there are neither roads nor bridges.

(2.) NESTING, one of the four united pariſhes above mentioned, contained 91 families, or 485 ſouls, in 1781.

(1.) * *To* NESTLE. *v. a.* [from *neſt*.] 1. To houſe, as in a neſt.—

Poor heart!
That labour'ſt yet to *neſtle* thee,
Thou think'ſt by hov'ring there to get a part
In a forbidden or forbidding tree. *Donne.*

Cupid

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Cupid found a downy bed,
And *neſtl'd* in her little head. *Prior.*

2. To cheriſh, as a bird her young.—
This Ithacus ſo highly is endear'd
To this Minerva, that her hand is ever in his deeds:
She, like his mother *neſtles* him. *Chapman.*

(2.) * *To* NESTLE. *v. n.* To ſettle; to harbour; to lie cloſe and ſnug, as a bird in her neſt.—Their purpoſe was, to fortify ſome ſtrong place of the wild country, and there *neſtle* 'till ſuccours came. *Bacon.*—A cock got into a ſtable and was *neſtling* in the ſtraw among the horſes. *L'Eſtrange.*—The king's fiſher wonts commonly by the waterſide, and *neſtles* in hollow banks. *L'Eſtr.*

Fluttering there they *neſtle* near the throne,
And lodge in habitations not their own. *Dryd.*

—The floor is ſtrewed with ſeveral plants, amonſt which the ſnails *neſtle* all the winter. *Addiſ.*

The monſters *neſtle* in the deep,
To ſeize you in your paſſing by. *Swift.*

* NESTLING. *n. ſ.* [from *neſtle.*] A bird juſt taken out of the neſt,

NESTO. See NESSUS, N° 2. and NESTUS.

(1.) NESTOR, in fabulous hiſtory, a ſon of Neleus and Chloris, nephew to Pelias, and grandſon to Neptune. He had eleven brothers, who were all killed with his father by Hercules. His tender age detained him at home, and was the cauſe of his preſervation. The conqueror ſpared his life, and placed him upon the throne of Pylos. He married Eurydice the daughter of Clymenus; or, according to others, Anaxibia the daughter of Atreus. He ſoon diſtinguiſhed himſelf in battle; and was preſent at the nuptials of Pirithous, when a bloody engagement took place between the Lapithæ and Centaurs. As king of Pylos and Meſſenia he led his ſubjects to the Trojan war, where he diſtinguiſhed himſelf by eloquence, addreſs, wiſdom, juſtice, and uncommon prudence. Homer diſplays his character as the moſt perfect of all his heroes; and Agamemnon exclaims, that if he had 20 generals like Neſtor, he ſhould ſoon ſee Troy reduced to aſhes. After the Trojan war Neſtor retired to Greece, where he enjoyed in his family peace and tranquillity. The ancients all agree that he lived three generations of men; which is ſuppoſed to be 300 years, but more probably only 90 years, allowing 30 years for each generation. He had many children; two daughters, Piſidice and Polycaſte; and ſeven ſons, Perſeus, Straticus, Aretus, Echephron, Piſiſtratus, Antilochus, and Thraſimedes. Neſtor was one of the Argonauts, according to Valerius Flaccus, v. 380, &c.

(2.) NESTOR, a poet of Lycaonia in the age of the emperor Severus. He was father to Piſander, who under the emperor Alexander wrote ſome fabulous ſtories.

(3.) NESTOR, one of Alexander's guards.

(4.) NESTOR, a native of Ruſſia, and the earlieſt Hiſtorian of the north, was born in 1056 at Bielozero; and, in his 19th year, aſſumed the monaſtic habit in the convent of Petcherſki at Kiof. He is ſaid to have lived to an advanced age, and to have died about A. D. 1115. His great work is his *Chronicle*, to which he has prefixed an introduction, which, after a ſhort ſketch of the early ſtate of the world, from the Byzantine writers, contains a geographical deſcription of Ruſſia and the adjacent regions; an account of the Sclavonian nations, their manners, their emigrations from the banks of the Danube, their diſperſion, and ſettlement in the ſeveral countries wherein their deſcendants are now eſtabliſhed. He then enters upon a chronological ſeries of the Ruſſian annals, from A. D. 858 to about 1113.

NESTORIANS, a ſect of ancient Chriſtians, ſtill ſubſiſting in ſome parts of the Levant; whoſe diſtinguiſhing tenet is, that Mary is not the mother of God. They take their name from NESTORIUS, Bp. of Conſtantinople, whoſe doctrines were ſpread with much zeal through Syria, Egypt, and Perſia. One of the chief promoters of the Neſtorian cauſe was Barſumas, Bp of Niſibis, A. D. 435. Such was his zeal and ſucceſs, that the Neſtorians who ſtill remain in Chaldea, Perſia, Aſſyria, and the adjacent countries, conſider him alone as their parent and founder. By him Pherozes, the Perſian monarch, was perſuaded to expel thoſe Chriſtians who adopted the opinions of the Greeks, and to admit the Neſtorians in their place, putting them in poſſeſſion of the principal ſeat of eccleſiaſtical authority in Perſia, the ſee of Seleucia, which the patriarch of the Neſtorians has always filled even down to our time.—Barſumas alſo erected a ſchool at Niſibis, from which proceeded thoſe Neſtorian doctors who in the 5th and 6th centuries ſpread their tenets through Egypt, Syria, Arabia, India, Tartary, and China. He differed conſiderably from Neſtorius, holding that there are two perſons in Jeſus Chriſt, as well as that the Virgin was not his mother as God, but only as man. The abettors of this doctrine refuſe the title *Neſtorians;* alleging that it had been handed down from the earlieſt times of the Chriſtian church. In the 10th century, the Neſtorians in Chaldea, whence they are ſometimes called *Chaldeans*, extended their ſpiritual conqueſts beyond mount Imaus, and introduced the Chriſtian religion into Tartary, properly ſo called, and eſpecially into that country called *Karit*, bordering on the N. part of China. The prince of that country, whom the Neſtorians converted to the Chriſtian faith, aſſumed, according to the vulgar tradition, the name of *John* after his baptiſm, to which he added the ſurname of *Preſbyter*, from a principal of modeſty; whence it is ſaid his ſucceſſors were called *Preſter John* until the time of Jenghiz Khan. But Moſheim obſerves that the famous Preſter John did not begin to reign in that part of Aſia before the concluſion of the 12th century. The Neſtorians formed ſo conſiderable a body of Chriſtians, that the miſſionaries of Rome were induſtrious in their endeavours to reduce them under the papal yoke. Innocent IV. in 1246, and Nicolas IV. in 1278, uſed their utmoſt efforts for this purpoſe, but without ſucceſs. Till the time of Pope Julius III. the Neſtorians acknowledged but one patriarch, who reſided firſt at Bagdad, and afterwards at Mouſul; but a diviſion ariſing among them, in 1551 the patriarchate became divided at leaſt for a time, and a new patriarch was conſecrated by that pope, whoſe ſucceſſors fixed their reſidence in the city of Ormus, in the mountainous part of Perſia,

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Perſia, where they ſtill continue diſtinguiſhed by the name of SIMEON; and ſo far down as the 17th century, theſe patriarchs perſevered in their communion with the church of Rome, but ſeem at preſent to have withdrawn from it. The great Neſtorian pontiffs, who form the oppoſite party, and look with a hoſtile eye on this little patriarch, have ſince 1559 been diſtinguiſhed by the general denomination of *Elias*, and reſide conſtantly in Mouſul. Their ſpiritual dominion is very extenſive, takes in a great part of Aſia, and comprehends alſo within its circuit the Arabian Neſtorians, and the Chriſtians of St Thomas, who dwell along the coaſt of Malabar. It is to the laſting honour of the Neſtorians, that of all the Chriſtian ſocieties eſtabliſhed in the Eaſt, they have been the moſt careful and ſucceſsful in avoiding a multitude of ſuperſtitious opinions and practices that have infected the Greek and Latin churches. About the middle of the 17th century, the Romiſh miſſionaries gained over to their communion a ſmall number of Neſtorians, whom they formed into a church; the biſhops of which reſide in the city of Amida, or Diarbekir, and all aſſume the name of *Joſeph*. Nevertheleſs the Neſtorians in general perſevere, to our own times, in their refuſal to enter into the communion of the Romiſh church, notwithſtanding the earneſt entreaties and alluring offers that have been made by the Pope's legate, to conquer their inflexible conſtancy.

NESTORIUS, from whom the ſect of NESTORIANS derive their name, was born in Germanica, a city of Syria, and educated and baptized at Antioch; and ſoon after his baptiſm he withdrew to a monaſtry in the ſuburbs of that city. Upon his being admitted prieſt he ſoon acquired ſo great reputation by his eloquence and the regularity of his life, that the emperor Theodoſius deemed him a fit perſon to fill the ſecond ſee in the Chriſtian church, and he was accordingly conſecrated biſhop of Conſtantinople in 429. He became a violent perſecutor of *heretics*, but contending for the doctrine that "the Virgin Mary cannot with propriety be called *the Mother of God*," he was deprived of his ſee by the counſel of Epheſus. He then retired to his ancient monaſtery at Antioch, whence he was taken by the emperor's order, and baniſhed in 435 to Tarſus. That city being deſtroyed by the barbarians, he was removed to Panopolis, a city of Thebais; where he was not ſuffered to remain long, but was compelled to go from place to place, till being in one of his journeys mortally bruiſed by a fall, death removed him from the fury of his perſecutors. Such of his writings as remain, prove that he was unjuſtly condemned. He rejected the errors of *Ebion*, *Pulus*, *Samoſatenus*, and *Photinus*. He maintained in expreſs terms, that the divine Word was united to the human nature in Jeſus Chriſt in the moſt ſtrict and intimate ſenſe poſſible; that theſe two natures, in this ſtate of union, make but one Chriſt and one perſon; that the properties of the Divine and human natures may both be attributed to this perſon; and that Jeſus Chriſt may be ſaid to have been born of a virgin, to have ſuffered and died; but he never would admit that *God* could be ſaid to have been *born*, to have *ſuffered*, or to have *died*.

NESTOS. See NESSUS, N° 2; and NASTUS.

NESTOSA, a town of Spain, in Biſcay.

NESTVED, a town of Denmark, in the iſle of Zealand, near the S. coaſt on the Nes; which running through it divides it into 2 unequal parts called *Great* and *Little Neſtved*. Theſe have 2 churches. In 1259, a bloody battle was fought near it; and in 1271, it was greatly damaged by fire. It lies 22 miles E. of Corſoer, and 38 W. of Copenhagen. Lon. 11. 51. E. Lat. 55, 15. N.

NESTUS, } or NESSUS, a river which riſes in
NESUS, } Mount Rodope, ſeparates Thrace from Macedonia, and falls into the Ægean ſea, above the iſland Thaſos. It is now called NESTO.

(1.) NET, *adj.* or NEAT, in commerce, ſomething pure, and unadulterated with any foreign mixture. Thus, wines are ſaid to be *net* when not falſified or balderdaſhed: and coffee, rice, pepper, &c. are *net* when the filth and ordures are ſeparated from them. See NEAT. A diamond is ſaid to be *net* when it has no ſtains or flaws; a cryſtal when tranſparent throughout.

(2.) NET is alſo uſed for what remains after the tare has been taken out of the weight of any merchandiſe; *i. e.* when it is weighed clear of all package. See TARE. Thus we ſay, a barrel of cochineal weighs 450 lb.; the tare is 50 lb. and there remains *net* 400 lb.

(3.)* NET. *n. ſ.* [*nati*, Gothick; *net* Saxon.] 1. A texture woven with large interſtices or meſhes, uſed commonly as a ſnare for animals.—

Poor bird! thou'dſt never fear the *net*, nor lime,
The pitfall nor the gin. *Shak. Macbeth.*

—Impatience entangles us like the fluttering of a bird in a *net*, but cannot at all eaſe our trouble. *Taylor's Holy Living.* 2. Any thing made with interſticial vacuities.—He made *nets* of chequered work for the chapiters. 1 *Kings* vii. 17.

The vegetable tribes,
Wrapt in a filmy *net*, and clad with leaves.
Thomſon.

(4.) A NET is chiefly uſed for catching fiſh or fowls. See BIRD CATCHING, § 2—4; and FISHERY, § 7, 12. The taking fowls by nets is the readieſt and moſt advantageous of all others, where numbers are to be taken. The making the nets is very eaſy, and what every true ſportſman ought to be able to do for himſelf. All the neceſſary tools are wooden needles, of which there ſhould be ſeveral of different ſizes, ſome round and others flat; a pair of round pointed and flat ſciſſars; and a wheel to wind off the thread. The packthread is of different ſtrength and thickneſs, according to the ſort of birds to be taken; and the general ſize of the meſhes, if not for very ſmall birds, is two inches from point to point. The nets ſhould neither be made too deep nor too long, for they are then difficult to manage; and they muſt be verged on each ſide with twiſted thread. The natural colour of the thread is too bright and pale, and is therefore in many caſes to be altered. The moſt uſual colour is the ruſſet; which is to be obtained by plunging the net, after it is made, into a tanner's pit, and letting it lie there till it is ſufficiently tinged: this is of a double ſervice to the net, ſince it preſerves the thread as well as alters the colour. The green colour is given by chopping ſome green wheat and boiling it in water, and then

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then ſoaking the net in this green tincture. The yellow colour is given in the ſame manner with the decoction of celandine; which gives a pale ſtraw-colour, which is the colour of ſtubble in harveſt. The brown nets are to be uſed on ploughed lands, the green on graſs grounds, and the yellow on ſtubble lands.

(5.) NET, DAY, among fowlers, a net generally uſed for taking ſuch ſmall birds as play in the air, and will ſtoop either to prey, gig, or the like; as larks, linnets, buntings, &c. The time of the year for uſing this net is from Auguſt to November; the beſt time is very early in the morning: the milder the air, and the brighter the ſun is, the better will be the ſport, and of longer continuance. The place where this net ſhould be laid, ought to be plain champain, either on ſhort ſtubble, green ley, or flat meadows, near corn-fields, and ſomewhat remote from towns and villages: let the net lie cloſe to the ground, that the birds creep not out and eſcape. The net is made of fine pack-thread with a ſmall meſh, not exceeding half an inch ſquare; it muſt be three fathoms long, and one broad: verged about with a ſmall but ſtrong cord; and the two ends extended upon two ſmall long poles, ſuitable to the breadth of the net, with four ſtalks, tail-ſtrings, and drawing lines. This net is compoſed of two nets exactly alike; laid oppoſite to one another, ſo even and cloſe, that when they are drawn and pulled over, the ſides muſt meet and touch each other. Stake this net down with ſtrong ſtakes, very ſtiff on their lines, ſo that you may with a nimble touch caſt them to and fro at pleaſure; then faſten your drawing cords or handlines (of which there muſt be a dozen at leaſt, and each two yards long) to the upper end of the foremoſt ſtaves: and ſo extend them of ſuch a ſtraitneſs, that with a little ſtrength they may riſe up in the nets, and caſt them over. The net, being thus laid, place the gigs or playing wantons about 20 or 30 paces beyond, and as much on this ſide the nets: the gigs muſt be faſtened to the tops of long poles, and turned into the wind, ſo as they may play to make a noiſe therein. Theſe gigs are a ſort of toys made of long gooſe feathers, like ſhuttle-cocks, and with little ſmall tunnels of wood running in broad and flat ſwan-quills, made round like a ſmall hoop; and ſo, with longer ſtrings faſtened to a pole, will, with any ſmall wind or air, move after ſuch a manner, that birds will come in great flocks to play about them. When the gigs are placed, then place the ſtale; which is a ſmall ſtake of wood, to prick down into the earth, having in it a mortice hole, in which a ſmall and ſlender piece of wood, about two feet long, is faſtened, ſo as it may move up and down at pleaſure: and faſten to this longer ſtick a ſmall line, which, running through a hole in the ſtick above mentioned, and ſo coming up to the place where you are to ſit, you may, by drawing the line up and down with your right hand, raiſe up the longer ſtick as you ſee occaſion. Faſten a live lark, or ſuch like bird, to this longer ſtick, which, with the line making it to ſtir up and down by pulling, will entice the birds to come to your net. There is another ſtale, or enticement, to draw on theſe birds, called a *looking glaſs*; which is a round ſtake of wood, as big as a man's arm, made very ſharp at the end, to thruſt it into the ground: very hollow in the upper part; above five fingers deep; into which hollow they place a three-ſquare piece of wood about a foot long, and two inches broad, lying upon the top of the ſtake, and going with a foot into the hollowneſs; which foot muſt have a great knob at the top, and another at the bottom, with a deep ſlenderneſs between; to which faſten a ſmall pack-thread, which running through a hole in the ſide of the ſtake, muſt come up to the place where you ſit. The three-ſquare piece of wood, which lies on the top of the ſtake, muſt be of ſuch a poiſe and evenneſs, and the foot of the ſocket ſo ſmooth and round, that it may whirl and turn round upon the leaſt touch; winding the pack-thread ſo many times about it, which being ſuddenly drawn, and as ſuddenly let go, will keep the engine in a conſtant rotary motion: then faſten with glue on the uppermoſt flat ſquares of the three-ſquare piece, about 20 ſmall pieces of looking-glaſs, and paint all the ſquare wood between them of a light and lively red; which, in the continual motion, will give ſuch a reflection, that the birds will play about until they are taken. Both this and the other ſtale are to be placed in the middle between the two nets, about two or three feet from each other; ſo that, in the falling of the nets, the cords may not touch or annoy them: neither muſt they ſtand one before or after another; the glaſs being kept in a continual motion, and the bird very often fluttering. Having placed the nets in this manner, with the gigs and ſtales, go to the further end of the long drawing-lines and ſtale-lines; and lay the main drawing line acroſs your thigh, and, with your left, pull the ſtale-lines to ſhow the birds; and when you perceive them to play near and about your nets and ſtales, then pull the net over with both hands, with a quick but not too haſty motion; for otherwiſe your ſport will be ſpoiled. See Plate CCXXXVII, where A ſhows the bodies of the main net, and how they ought to be laid. B, the tail-lines, or the hinder-lines, ſtaked to the ground. C, the fore lines ſtaked alſo to the ground. D, the bird-ſtale. E, the looking-glaſs ſtale. G, the line which draws the bird-ſtale. H, the line that draws the glaſs-ſtale. I, the drawing double lines of the nets, which pulls them over. K, the ſtakes which ſtake down the four nether points of the nets and the two tail-lines. L, the ſtakes that ſtake down the fore-lines. M, the ſingle line, with the wooden button to pull the net over with. N, the ſtake that ſtakes down the ſingle line, and where the man ſhould ſit; and O, the gig.

(6.) NET PRODUCE, a term uſed to expreſs what any commodity has yielded, all tare and charges deducted.

NETHAN, a river of Scotland in Lanarkſhire, which riſes in the hills between Leſmahagoe and Muirkirk; and running E. 6 miles is joined by the Logan, after which the united ſtreams run N. and E. and fall into the Clyde near Abbeygreen. Its banks are ornamented with hanging woods, corn fields, and paſtures. It abounds with trouts, and ſilver eels, and in Auguſt is viſited by ſalmon.

(1.) NETHE

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(1.) NETHE, a river of France, in the department of the Dyle, and late prov. of Auſtrian Brabant, which runs into the Dyle, 6 miles NW. of Malines.

(2.) NETHE, a river of Scotland. See NITH.

*NETHER. *adj.* [*neother*, Saxon; *neder*, Dutch. It has the form of a comparative, but is never uſed in expreſſed, but only in implied compariſon; for we ſay the *nether* part, but never ſay this part is *nether* than that, nor is any poſitive in uſe, though it ſeems comprized in the word *beneath*. *Nether* is not now much in uſe.] 1. Lower; not upper.—No man ſhall take the *nether* or the upper mill-ſtone to pledge. *Deut.* xxiv. 6.—In his picture are two principal errors, the one in the complexion and hair, the other in the mouth, which commonly they draw with a full and great *nether* lip. *Peacham.*—

This odious offspring,
Thine own begotten, breaking violent way,
Tore thro' my entrails; that with fear and pain
Diſtorted, all my *nether* ſhape thus grew
Transform'd. *Milton's Paradiſe Loſt.*

The upper part whereof was whey,
The *nether*, orange mix'd with grey. *Hudibras.*

A beauteous maid above, but magic arts,
With barking dogs deform'd her *nether* parts.
Roſcommon.

As if great Atlas from his height
Should ſink beneath his heav'nly weight,
And with a mighty flaw, the flaming wall
Should gape immenſe, and ruſhing down o'erwhelm this *nether* ball. *Dryden.*

Two poles turn round the globe.
The firſt ſublime in heaven, the laſt is whirl'd
Below the regions of the *nether* world. *Dryd.*

2. Being in a lower place.—

This ſhews you are above,
You juſtices, that theſe our *nether* crimes
So ſpeedily can venge. *Shak. King Lear.*

Numberleſs were thoſe bad angels ſeen
Hov'ring on wing under the cope of hell,
'Twixt upper, *nether*, and ſurrounding fires.
Milton.

3. Infernal; belonging to the regions below.—

No leſs deſire
To found this *nether* empire, which might riſe,
In emulation, oppoſite to heaven. *Milton.*

The gods with hate beheld the *nether* ſky,
The ghoſts repine. *Dryden's Æn.*

(1.) NETHERLANDS, the name given till lately to an extenſive country of Europe, anciently called BELGIUM, but afterwards denominated *Low Countries* or *Netherlands*, from their low ſituation. They lie between 2° and 7° lon. E. and between 50° and 53° 30' lat. N. and are bounded by the German ſea on the N. by Germany on the E. by the ci-devant Lorrain and France on the S. and by France and the Britiſh ſeas on the W.; extending near 300 miles in length from N. to S. and 200 miles in breadth from E. to W. They conſiſted of 17 provinces; 10 of which were called the *Auſtrian and French Netherlands*, and the other ſeven the *United Provinces*.

(2.) NETHERLANDS, CLIMATE, SURFACE, SOIL, &c. OF THE. The climate differs in the ſeveral provinces; in thoſe towards the S. it reſembles that of England, though the ſeaſons are more regular. In the N. provinces the winter is generally very ſharp, and the ſummer ſultry hot; but the extreme cold and exceſſive heat ſeldom continue above five or ſix weeks. The air is reckoned very wholeſome, but is ſubject to thick fogs in winter, through the moiſtneſs of the country, which would be very noxious, were it not for the dry eaſterly winds, which, blowing off a long continent, for two or three months in the year, clear the air, and occaſion very ſharp froſts in January and February; during which, the ports, rivers, and canals, are commonly ſhut up. The face of the country is low and flat; for, except ſome ſmall hills and a few riſing grounds in Utrecht and Guelderland, and in the parts lying toward Germany, there is no hill to be ſeen in the whole 17 provinces. This is the reaſon that they have been called the *Low Countries*. The ſoil is in general fertile but varies in the different provinces. French Flanders abounds in grain, vegetables, flax, and cattle, but is in want of wood.

(3.) NETHERLANDS, HISTORY OF THE. The greateſt part of Belgium was conquered by the Romans; and that part which lies towards Gaul continued under their ſubjection till the decline of that empire. Early in the 5th century it was over-run by the Vandals: In 445, Clodio with his Franks became maſters of it. In 451 Attila, king of the Huns, ravaged it with an army of 600,000 barbarians, and burnt moſt of the towns: yet in this barbarous age, chriſtianity, which was introduced into it in the 3d century, was eſtabliſhed, and many churches built in it. Under the Franch monarchy, it was part of the kingdom of Metz and Auſtraſia. It was afterwards divided into various ſtates, duchies and counties, under different dukes and counts; ſuch as BRABANT, LUXEMBURG, FLANDERS, HOLLAND, HAINAULT, &c. (See theſe articles.) Philip the Hardy, D. of Burgundy, and ſon of John K. of France, married Margaret daughter of Lewis E. of Flanders, and ſucceeded him in 1383. His ſon Antony added Brabant and Limburg, in which he ſucceeded his aunt, in 1406. Maximilian of Auſtria, ſon of the Emperor Ferdinand III. acquired, by marrying Mary ducheſs of Burgundy, the duchies of Brabant, Limburg, and Luxemburg; the counties of Flanders, Burgundy, Hainault, Holland, Zealand, and Namur; and the lordſhip of Frieſland. Philip of Auſtria, ſon to Maximilian and Mary, married Jane the daughter of Ferdinand king of Arragon and of Iſabella queen of Caſtile; by which means their ſon Charles inherited not only almoſt all Spain, and the great countries then lately diſcovered in America, but alſo the whole provinces of the Netherlands, and was choſen emperor. (See CHARLES V.) Towards the end of 1527, he added to his dominions the temporalities of the biſhoprick of Utrecht on both ſides of the Yſſel; and Henry of Bavaria, being diſtreſſed through war with the duke of Guelderland, and tired with the continued rebellion of his own ſubjects, ſurrendered to the emperor the temporalities of his dioceſe, which was confirmed by the pope, and the ſtates of the country. In 1536, Charles V. bought of Charles of Egmont the reverſion of the duchy of Guelderland and of the county of Zutphen, in caſe that Prince ſhould die without iſſue. The

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ſame year the city of Groningen ſubmitted to Charles V.; and in 1543 he put a garriſon into the city of Cambray, and built a citadel there. Having thus united the 17 provinces in one body, he ordered that they ſhould continue for ever under the ſame prince, without being ſeparated or diſmembered; for which purpoſe he publiſhed, in Nov. 1549, with the conſent and at the requeſt of the ſtates of all the provinces, a perpetual and irrevocable edict, by which it was enacted, that to keep all theſe provinces together under the ſame prince, the right of repreſentation, with regard to the ſucceſſion of a prince or princeſs, ſhould take place for ever, both in a direct and collateral line, notwithſtanding the laws of ſome provinces to the contrary. Charles alſo propoſed to incorporate theſe provinces with the Germanic body, and to make them a circle of the empire, under the title of the circle of *Burgundy*, to engage the princes of the empire to preſerve thoſe provinces. But the people of the Netherlands, jealous of their liberty, did not like that incorporation; and when they were aſked to pay their ſhare towards the expences of the empire, they refuſed it; whereupon the princes of Germany refuſed to take any part in the wars in Flanders, and conſidered thoſe provinces as not belonging to the Germanic body. Philip I. and his ſon Charles V. being born in the Netherlands, had that natural affection for them which men have for their native country; and knowing how jealous the inhabitants were of their liberty, and of the privileges granted to them by their former princes, they took care to preſerve them, and willingly allowed the ſtates, as the guardians of the people's liberty and privileges, to ſhare the ſupreme authority with them. But Philip II. ſon of Charles V. had not the ſame affection, nor thoſe generous ſentiments, which his father had endeavoured to inſpire him with: and, when he removed to Spain, he left them to the weak government of a woman, to the proud and haughty ſpirit of Card. Granville, and to the wild ambition of ſome lords of theſe provinces, who, availing themſelves of the blunders of the council of Spain, found their intereſt in the diſturbances they produced. Philip, alſo, inſtead of the mild meaſures which his predeceſſors had ſucceſsfully employed, as beſt ſuiting the genius and temper of the people, had recourſe to the moſt violent and cruel proceedings; which, far from removing the evil, ſerved only to render it incurable. The Spaniards whom he ſent thither, being born and educated in an abſolute monarchy, jealous of the liberties, and envious of the riches of the people, broke through all their privileges, and uſed them almoſt as ill as they had done the natives of America. This occaſioned a general inſurrection. The counts Hoorn, Egmont, and the prince of Orange, appearing at the head of it, and Luther's reformation gaining ground about the ſame time in the Netherlands, his diſciples joined the malecontents: whereupon Philip introduced an inquiſition to ſuppreſs them, and many thouſands were put to death by that court, beſides thoſe that periſhed by the ſword; for theſe perſecutions and tyrannies had occaſioned a civil war, in which ſeveral battles were fought. The counts Hoorn and Egmont were taken and beheaded: but William I. prince of Orange, retiring into Holland, did, by the aſſiſtance of England and France, preſerve Holland and ſome of the adjacent provinces, which entered into a treaty for their mutual defence at Utrecht in 1579, and they have ever ſince, till the revolution in 1796, being ſtyled the UNITED PROVINCES; but the other provinces were reduced to the obedience of Spain by the duke of Alva and other Spaniſh generals. However, their ancient privileges were in a great meaſure reſtored; every province was allowed its great council or parliament, whoſe concurrence was required to the making of laws, and raiſing money for the government, though theſe aſſemblies were too often obliged to follow the dictates of the court. The late Emperor Joſeph II. endeavoured to deprive them even of the form of their free conſtitution; and he might very probably have ſucceeded, had he not attempted at the ſame time a reformation of the church. The people were ſo bigoted to the Romiſh ſuperſtition, that though they had tamely ſubmitted to many encroachments on their civil rights, no ſooner did the monarch encroach upon the property of the church than they reſiſted his authority, and claimed all their ancient privileges, political and religious. Thus religious bigotry for once ſaved a free people from the iron rod of deſpotiſm. The provinces under the government of France were, till the late revolution, under the ſame ſevere arbitrary dominion as the other ſubjects of that crown. The Spaniards continued poſſeſſed of almoſt 8 of theſe provinces, until the duke of Marlborough, general of the allies, gained the memorable victory of Ramillies. After which, Bruſſels the capital, and great part of theſe provinces, acknowledged Charles VI. their ſovereign; and his daughter Maria Thereſa, the late empreſs queen, remained poſſeſſed of them till the war that followed the death of her father, when the French made an entire conqueſt of them, except part of the province of Luxemburg; but they were reſtored by the peace of Aix-la-Chapelle in 1748, and the French retained only a part of 5 provinces. (See N° III.) which they retained ever after. But the many revolutionary tranſactions, that took place, in conſequence of the FRENCH REVOLUTION and the late WAR, have occaſioned very great changes throughout the whole of the Netherlands. See § 4.

(4.) NETHERLANDS, MODERN DIVISIONS AND PRESENT STATE OF THE. Previous to the French revolution, the Netherlands were divided into three grand diviſions, called *Auſtrian*, *Dutch* and *French* Netherlands; but this extenſive country, is now in name (as it has long been in effect) united to France, and may with great propriety be ſtyled wholly *French* Netherlands: For,

I. NETHERLANDS, AUSTRIAN, comprehending the whole ci-devant provinces in Flanders, Brabant, Leige, Namur, Hainault, Auſtrian Gueldres, Maeſtricht, Venloo, Luxemburg, and Limburg, after being repeatedly over-run and conquered by the French republicans, in 1793, 94, and 95, were by a decree of the convention in Dec. 1796, and the requeſt of the inhabitants, annexed to the then French Republic, and divided into 9 departments; viz. the DYLE, ESCAUT, LYS, GEMAP-

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GEMAPPES, FORETS, SAMERE and MEUSE; OURTE, the LOWER MEUSE, and the TWO NETHES. (See these articles.) These provinces were ceded by the emperor to the French Republic, at the treaty of Luneville, in 1801, and confirmed by that of Amiens in 1802.

II. NETHERLANDS, DUTCH, or the UNITED PROVINCES, were also totally over-run and conquered by the French Republicans, in 1795, in many places with the voluntary consent of the deluded inhabitants, who now too late regret their confidence in French philosophers and philanthropists. See UNITED PROVINCES. In 1796, they were erected into a democratic state after the French model, entitled the BATAVIAN REPUBLIC; and divided into the following 8 Departments: the EEMS, YSSEL, RHINE, *Amstel*, TEXEL, DELFT, the DOMMEL and SCHELDT, and the MEUSE; most of which are described in their order. Of these the capitals are Lewarden, Zwoll, Arnheim, Amsterdam, Alkmaer, Delft, Herzogenbosch, and Middleburg.

III. NETHERLANDS, FRENCH, comprehended the ci-devant county of Artois and Cambresis, and part of Hainault, Flanders and Luxemburg; which 3 last were thence distinguished by the epithet of *French*. These having been united to France before the revolution, formed an integral part of the republic, and were included in the departments of the NORTH and the MOSELLE.

* NETHERMOST. *adj.* [superl. of *nether*.] Thou hast delivered my soul from the *nethermost* hell. *Psalm* lxxxvi. 13.—

Undaunted to meet there whatever pow'r,
Or spirit, of the *nethermost* abyss
Might in that noise reside. *Milton.*

—All that can be said of a liar loged in the very *nethermost* hell, is this, that if the vengeance of God could prepare any place worse than hell for sinners, hell itself would be too good for him. *South.*—Heraclitus tells us, that the eclipse of the sun was after the manner of a boat, when the concave, as to our sight, appears uppermost, and the convex *nethermost*. *Keil ag. Burnet.*

NETHES, THE TWO. See DEUX NATTES.

NETHINIMS, among the Jews, the posterity of the Gibeonites, who were condemned by Joshua to be hewers of wood and drawers of water for the house of God.

NETHY, a river of Inverness-shire, which rises in the hills of Badenoch, runs through the parish of Abernethy, (to which it gives name,) for 7 miles, and falls into the Spey, near the church.

NETIESS, a town of Bohemia in Schlan.

NETO, a river of Naples, which runs between Calabria Citra, and Calabria Ultra, and falls into the sea, 7 miles NNW. of Cotrona.

NETOPION, or NETOPIUM, } a name given by the ancients to a very fragrant and costly ointment, consisting of a great number of the finest spicy ingredients. See MEDICINE, *Index*. Hippocrates, in his Treatise of the Diseases of Women, frequently prescribes the Netopion in diseases of the uterus; and in other places he speaks of its being poured into the ear as a remedy for deafness; these compositions, by their attenuating qualities, dividing the viscous and thick humours. *Netopion* is also sometimes used to express the *unguentum Ægyptiacum*, and sometimes simply for oil of almonds.

NETPHE, 2 towns of Germany, in the circle of Westphalia and principality of Siegen: viz.

1. NETPHE, LOWER, 4 miles E. of Siegen.
2. NETPHE, UPPER, 5 miles E. of Siegen.

NETSBUCKTOKE, a bay on the E. coast of Labrador, called also SANDWICH BAY. Lon. 57. W. Lat. 53. 45. N.

(1.) NETSCHER, Gaspard, an eminent painter born at Prague, in Bohemia, in 1639. His father dying while he was an engineer in the Polish service, his mother was obliged, on account of her religion, to leave Prague with her 3 sons. When she had proceeded three leagues, she stopped at a castle; which being soon after besieged, two of her sons were starved to death; but she escaped out of the fortress by night, and saved her only remaining child. Carrying him in her arms, she reached Arnheim in Guelderland, where she supported herself, and bred up her son. At length a physician took young Netscher under his patronage, with the view of giving him an education proper for a physician: but Netscher's genius leading him to painting, he could not forbear scrawling out designs upon the paper on which he wrote his themes; whereupon he was sent to a glazier, who was the only person in the town that understood drawing, and afterwards to Deventer, to a painter named *Terburg*, who was an able artist; and having acquired under him a great command of his pencil, went to Holland, where he worked a long time for the dealers in pictures, at very low prices. He then resolved to go to Rome; and for that purpose embarked on board a vessel bound for Bourdeaux. But his marrying in that city prevented his travelling into Italy: and therefore returning into Holland, he settled at the Hague; where he applied to portrait-painting, and acquired such reputation, that he was much employed, and his portraits are still to be seen all over Europe. He died at the Hague in 1684.

(2, 3.) NETSCHER, Theodore and Constantine, sons of Gaspard, were both also good portrait-painters.

NETSCHKAU, a town of Upper Saxony, in Vogtland, 3 miles SE. of Greitz, and 12 SW. of Zwickau.

NETTE, a town of Germany, in Osnaburg.

(1.) * NETTING, *n. s.* A reticulated piece of work.

(2.) NETTINGS, in a ship, are a sort of grates made of small ropes, seized together with rope-yarn or twine, and fixed on the quarters and in the tops; they are sometimes stretched upon the ledges from the waste trees to the roof-trees, from the top of the forecastle to the poop, and sometimes are laid in the waste of a ship to serve instead of gratings.

(1.) * NETTLE. *n. s.* [*netel*, Sax.] A stinging herb well known.—

The strawberry grows underneath the *nettle*. *Shak.*

Some so like to thorns and *nettles* live,
That none for them can, when they perish, grieve. *Waller.*

(2.) NETTLE, in botany, see URTICA.

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(3.) NETTLE, DEAD. See LAMIUM.

(4.) NETTLE, HEDGE. See GALEOPSIS.

(5.) NETTLE, See MEDUSA, N° II; and ANIMAL FLOWER, § 1.

(6.) NETTLE, SHRUBBY HEDGE. See PRASIUM.

(7.) NETTLE TREE. See CELTIS.

* *To* NETTLE *v. a.* [from the noun.] To ſting; to irritate; to provoke.—The princes were ſo *nettled* at the ſcandal of this affront, that every man took it to himſelf. *L'Eſtrange.*—Although at every part of the Apoſtle's diſcourſe ſome of them might be uneaſy and *nettled*, yet a moderate ſilence and attention was ſtill obſerved. *Bent.*

NETTUNO, a handſome town of Italy, in the Campagnia of Rome. It is but thinly peopled, though ſeated in a fertile ſoil. The inhabitants are almoſt all hunters. Lon. 12. 57. E. Lat. 41. 30. N.

NETUM, an ancient town of Sicily, now called NOTO. *Sil. Ital.* xiv. 269.

* NETWORK, *n. ſ.* [*net* and *work.*] Any thing reticulated or decuſſated, at equal diſtances, with interſtices between the interſections.—

Nor any ſkilled in workmanſhip emboſs'd,
Nor any ſkill'd in loops of fing'ring fine;
Might in their diverſe cunning ever dare,
With this ſo curious *network* to compare. *Spenſ.*

—A large cavity in the ſinciput was filled with ribbons, lace, and embroidery, wrought together in a curious piece of *network*. *Addiſon.*—Whoever contemplates with becoming attention this curious and wonderful *net-work* of veins, muſt be tranſported with admiration. *Blackmore.*

NETZE, a river of Lower Saxony, which runs into the Ilmenau, 2 miles SW. of Butlingen.

NEVA, a river at Peterſburg, in Ruſſia. The views upon its banks exhibit the moſt grand and lively ſcenes. It is in moſt places broader than the Thames at London. It is deep, rapid, and tranſparent as cryſtal, and its banks are lined on each ſide with a continued range of handſome buildings. On the N. ſide of the fortreſs, the academy of ſciences and that of arts are the moſt ſtriking objects; on the oppoſite ſide are the imperial palace, the admiralty, the manſions of many Ruſſian nobles, and the Engliſh Line, ſo called becauſe (a few houſes excepted) the whole row is occupied by Engliſh merchants. In front of theſe buildings on the S. ſide, is the quay, which ſtretches for 3 miles, except where it is interrupted by the admiralty; and the Neva, during the whole of that ſpace, was embanked at the expenſe of the late Catharine II. by a wall, parapet, and pavement of hewn granite; a moſt elegant and durable monument of imperial munificence. There is a communication between the oppoſite ſides of the river by a bridge of pontoons, which, when any thing is apprehended from the force of ice ruſhing down the ſtream, can be, and is generally, removed. The great depth of the river, and the irreſiſtible impetuoſity of thoſe vaſt ſhoals of ice, which in the beginning of winter come down this rapid river, prevent the building of a ſtone bridge. An attempt, however, was made to remedy this inconvenience; and a Ruſſian peaſant actually projected the plan of throwing a wooden bridge of one arch acroſs it, which in its narroweſt part is 980 feet in breadth; and which would riſe 168 feet above the ſurface of the water. This model was 98 feet long; but as the bridge was never erected, it is unneceſſary to give a particular deſcription of the model, farther than juſt to mention, in Mr Coxe's words, that "it is ſo compactly conſtructed and of ſuch uniform ſolidity, that it has ſupported 3540 poods, or 127,440 lb. without having in the leaſt ſwerved from its direction, which is far more in proportion to its ſize, than the bridge, if completed, would have occaſion to ſuſtain from the preſſure of the carriages added to its own weight." For farther particulars reſpecting this model, and its author, the Ruſſian peaſant, whoſe name is *Kulibin*, we refer the inquiſitive reader to Mr Coxe's Travels.

(1.) NEVAY, a pariſh of Scotland in Angusſhire, united to that of ESSIE, early in the 17th century. (See ESSIE.) It is the property of Sir J. Stuart M'Kenzie, Lord Privy Seal; who (ſays Dr Playfair) "lately granted new leaſes to his tenants on this and his other eſtates in Strathmore. His moderation and generoſity on that occaſion will not be ſoon forgotten. Every occupier of a farm was ſecured in the poſſeſſion of it, upon condition of paying a very *ſmall* riſe of rent. Had the uſual methods of *ſcrewing* and *racking tenants* been adopted, the landlord might have greatly increaſed his revenue; but he preferred the pleaſure of making ſeveral hundreds of people COMFORTABLE and HAPPY." *Stat Acc.* Vol. XVI. p. 215.

(2.) NEVAY, a hill in the above pariſh.

NEUBEGAU, a town of Auſtria, 5 miles SE. of Vienna.

NEUBERG, two towns of Germany: 1. in Carniola, 4 miles N. of Crainburg: 2. in Stiria, 20 miles NE. of Pruck.

(1.) NEUBURG, a principality or duchy of Germany, in the circle of Bavaria, united with that of SALTZBACH. It has a vote at the diet and college of Princes. Some of the people are Lutherans, but the Roman catholics are moſt numerous. It has a government of its own.

(2.) NEUBURG, the capital of the above duchy, is ſeated on a hill, near the Danube; is well built and fortified, and has a palace. In 1632 and 1633, it was taken by the Swedes and Bavarians; in 1703, by the Bavarians; and in 1744, by the Auſtrians. It lies 15 miles W. of Ingoldſtadt, 28 NNE. of Augſburg, and 40 SW. of Ratiſbon. Lon. 11. 10. E. Lat. 48. 45. N.

(3.) NEUBURG, a town of Bavaria, on the Schwarza, 19 miles SE. of Amberg, and 24 NNE. of Ratiſbon. Lon. 30. 5. E. Ferro. Lat. 49. 16. N.

(4.) NEUBURG, a town of Lower Auſtria, on the Danube, 5 miles from Vienna, with a celebrated monaſtery. Lon. 16. 20. E. Lat. 48. 13. N.

(5.) NEUBURG, a town of Bavaria, on the left bank of the Inn; 4 miles S. of Paſſau.

(6.) NEUBURG, a town of Germany, in Briſgau, near the Rhine; 12 miles N. of Baſle, and 12 S. of Briſach. Lon. 7. 35. E. Lat. 47. 47. N.

(7.) NEUBURG, a town of Pruſſia, in Pomerelia, on the Viſtula; 32 miles S. of Dantzick.

(8.) NEUBURG, a town of Wirtemburg, on the Entz, with a fort; 25 miles W. of Stutgard. Lon. 8. 34. E. Lat. 48. 52. N.

(9.) NEUBURG, CLOSTER. See CLOSTER, N° 3.

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NEUBURGENSIS. See LITTLE, N° 1.

(1.) NEUCHATEL, } or NEUFCHATEL, a
(1.) NEUCHATTEL, } county of the Helvetic republic, bounded on the W. by the late Franche Comte, on the N. by Baſle, and on the E. and S. by the cantons of Berne and Friburg. This principality, including Vallengin, extends from the lake of Neuchattel to the borders of Franche Comte, being about 36 miles long, and 18 broad. The plain, with the lower part of the mountains, is occupied by the diſtrict of Neuchattel, but Vallengin is totally incloſed by Jura. Parallel chains of theſe mountains run from E. to W. forming ſeveral valleys in the moſt elevated parts. The lower grounds of this chain conſiſt of arable lands and vineyards; the higher of large tracts of foreſt, which in many parts have been cleared and converted into paſture-grounds, intermixed with fields of barley and oats. The inhabitants are numerous, and remarkable for their genius, politeneſs, and active induſtry. It contains 3 cities, one town, 90 villages, and about 300 houſes diſperſed in the mountains. The inhabitants are all proteſtants, except two Roman catholic villages; and in 1529 they entered into a ſtrict alliance with the cantons of Berne, Friburg, Soleure, and Lucern. The air is healthy and temperate, but the ſoil not every where equally fertile: however there are large vineyards, which produce red and white wine, which laſt is excellent. The paſtures on the mountains feed a great number of all ſorts of cattle; and there are plenty of deer in the foreſts; beſides large trouts, and other good fiſh, in the lakes and rivers. The mildneſs of its former government, and agreeable ſituation of the inhabitants in general in theſe diſtricts, is evident from the great increaſe of population in the ſpace of 32 years. In 1752 they contained only 28,017 ſubjects and 4328 aliens; but in 1784 the number was augmented to 31,576 ſubjects, and 9704 aliens; being an increaſe of near a 4th part in that time. The facility with which the burgherſhip of Neuchattel is acquired, may alſo be accounted one of the means of augmenting its population; for between 1760 and 1770, the magiſtrates admitted 42 perſons to this privilege; from 1770 to 1780, 46; from 1780 to 1785, 51; in all 138; many of whom had children before they purchaſed their burgherſhip, and 38 of them were foreigners, either German, French, or Dutch. The diſtricts of Neuchattel and Vallengin formerly made part of the Pruſſian dominions; it had its own counts for a long time; the laſt of whom dying in 1694 without iſſue, it came to Mary of Orleans ducheſs of Nemours, his only ſiſter, who alſo died without iſſue in 1703. There were then 13 competitors, among whom was Frederick I. king of Pruſſia, who claimed as heir to the Prince of Orange. His right was acknowledged by the ſtates of the country in 1707; but in this part of his dominions the Pruſſian monarch is far from having ſuch an abſolute authority as in others. On the acceſſion of Frederick I. ſome general articles were agreed on, by which the prerogatives of the prince and the rights of the people were ſettled. Diſputes, however, occurred betwixt the king and his ſubjects, which were not thoroughly ſettled till 1768, when the general articles were not only renewed, but explained wherever their tenor had been miſtaken, confirming alſo ſeveral privileges in favour of the people, which had hitherto been equivocal or not duly obſerved. The moſt important of theſe general articles were, 2. The eſtabliſhment of the reformed religion, and the toleration of no other, except in two places where it was already prevalent. 2. No civil or military office to be poſſeſſed by foreigners, that of governors only excepted. 3. All ſubjects have a right to enter into the ſervice of a foreign prince not actually at war with the king as ſovereign of Neuchattel; the ſtate may alſo continue neuter when the king is engaged in wars which do not concern the Helvetic body. 4. The proper adminiſtration of juſtice; for which the three eſtates of Neuchattel and Vallengin ſhall be annually aſſembled. 5. The magiſtrates to hold their places during good behaviour; but of this certain perſons appointed at Neuchattel, and not the king, are to judge. 6. The ſovereign, on his acceſſion, ſhall take an oath to maintain the rights, liberties, and cuſtoms of the people, *written* and *unwritten*. This laſt article was no leſs important than ſingular; for upon an unwritten cuſtom one of their moſt eſſential privileges depends, viz. that the ſovereign ſhall be conſidered only as reſident at Neuchattel. "Now (ſays Mr Coxe), this privilege, in conjunction with the 3d article juſt cited, forms the baſis of their civil liberty. By the former, the prince, when abſent, can only addreſs his ſubjects through his governor and the council of ſtate; and no ſubject can be tried out of the country, or otherwiſe than by judges appointed by the conſtitution: by the latter, ſhould the king of Pruſſia be at war with all Germany, the people of Neuchattel and Vallengin are by no means obliged to arm in his defence; but individuals may even ſerve againſt him, as long as the powers whom they ſerve are not engaged in any hoſtilities againſt their own country." A remarkable inſtance of this laſt, our author gives in the following anecdote. "When Henry duke of Longueville, and ſovereign of Neuchattel, was, in 1650, ſent to the caſtle of Vincennes, Felix de Mareval, captain of the Swiſs guards, kept guard in his turn, though he was citizen of Neuchattel, at the door of the priſon where his ſovereign was confined." The king conferred nobility, named the principal officers of ſtate, appointed the preſidents of the courts of juſtice called *chatelins* and *mayors*; but his revenues ſcarcely amounted to L. 5000 a-year. Neuchattel enjoyed very conſiderable privileges before the late revolutions; it had the care of the police within its own diſtrict, and was governed by its own magiſtracy, conſiſting of a great and little council. The three eſtates of the country formed the ſupreme tribunal, and received appeals from the inferior court of juſtice. They conſiſted of 12 judges divided into three eſtates: the judges in the firſt and ſecond diviſion held their places for life; but thoſe in the third were choſen annually. But it is unneceſſary to ſay more of a government now totally overturned by Bonaparte. We ſhall therefore only quote Mr Coxe's concluding lines reſpecting its former happy ſtate: "In a word, perſonal liberty is almoſt as tenderly and as

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as ſecurely protected by the laws of this country as by thoſe of our own invaluable conſtitution. Thus the liberties of the people are as well and perhaps better ſecured, than even in the democratical cantons; for although the moſt deſpotic prince in Germany is ſovereign, his power is exceedingly limited. Among the ſtriking circumſtances which characteriſe this government, muſt be mentioned the very liberal encouragement given to ſtrangers who ſettle in the country. They enjoy every privilege of trade and commerce; and in no ſtate are fewer eſſential diſtinctions made between ſtrangers and natives." Such was its condition. Neuchattel now belongs to France.

(2.) NEUCHATTEL, a tolerably handſome town, capital of the above county. There are ſeveral ancient ruins near it, which ſhow its former extent; and there are two large churches, beſides a caſtle, where the governor reſides. It contains about 3000 inhabitants, and is ſituated partly on a ſmall plain between Mount Jura and the lake of Neuchattel, which is 17 miles long and 5 broad; the ſide of the harbour is the uſual walk of the inhabitants. Part of it too is built upon the ſide of the mountain; whence ſome of its ſtreets are very ſteep. In this ſmall place ſeveral public works have been executed, which Mr Coxe thinks are far beyond the revenues, or even the wants, of ſuch a little ſtate. Among theſe he inſtances a ſuperb cauſeway and a town houſe "built (ſays he) of ſuch ſolid materials as if it was intended to ſurvive to the moſt diſtant poſterity, and to rival the duration of the much-famed Roman capitol." The chief article of exportation is wine, which is much eſteemed; and manufactures of printed linens and cotton have been eſtabliſhed with conſiderable ſucceſs. The flouriſhing ſtate of Neuchattel is principally owing to the benefactions of Mr David Pury, late banker at Liſbon. He was born at Neuchattel in 1709; but having received his education there, he quitted it in great poverty and repaired to Geneva, where he ſerved his apprenticeſhip. From Geneva he went to London, where he acted as clerk to a dealer in precious ſtones, and acquired great reputation by eſtimating the value of diamonds at ſight. After a long reſidence in England he went to Liſbon, where he carried on a very extenſive commerce; and having been appointed court-banker, his fortune rapidly increaſed. His generoſity, however, kept pace with his wealth; and he not only remitted large ſums to Neuchattel while living, but left his country his heir when he died. His contributions are all eſtimated by Mr Coxe at L. 200,000; a conſiderable part of which has been employed in conſtructing the public works already mentioned. Neuchattel had a grand and little council; the firſt compoſed of 40 perſons, the latter of 24 members. Lon. 7. 10. E. Lat. 47. 3. N.

(3.) NEUCHATTEL, a large lake, called alſo Yverdun, which ſeparates the above county from the cantons of Bern and Friburg; 21 miles long from Yverdun on the SW. to Neuchattel on the NE. and 4½ broad. It abounds with excellent fiſh, and communicates with the lake of Bienne.

NEUDOMA, a river of Norway, which runs into the North Sea, 20 miles W. of Wardhuys.

(1.) NEUDORF, a town of Silefia, in Oels.

(2.) NEUDORF, a town of Auſtria, 8 miles S. of Vienna.

(3.) NEUDORF, a town of Bohemia, in Chrudim.

(4.) NEUDORF, a town of Hungary, 6 miles ENE. of Kapſdorf, and 27 NW. of Caſſovia.

(1.) NEVE, Timothy, an Engliſh divine, born in Shropſhire and educated at Cambridge. He was prebendary of Lincoln, archdeacon of Huntingdon, and rector of Alwalton, where he died in 1740. He wrote *an Eſſay on the Invention of Printing*, and the earlieſt Engliſh printers.

(2.) NEVE, an iſland of Scotland on the NW. coaſt of the iſland of Iſlay.

(1.) NEVEL, a town of Ruſſia, in Polotſk.

(2.) NEVEL, or NEBÉL, in the Jewiſh antiquities, a kind of muſical inſtrument. See NABLUM.

(1.) NEUENBURG, a town of France, in the dep. of the Lower Rhine; one mile S. of Hagenbach.

(2.) NEUENBURG, a town of Courland.

(3.) NEUENBURG, a town of Wirtemburg, famous for blood-ſtones, 16 miles E. of Raſtatt, and 22 W. of Stutgard.

(4.) NEUENBURG. See NEUBURG, N° 7.

NEUENDAMME, } two towns of Branden-
NEUENDORE, } burg; 1. nine miles N. of Cuſtrin: 2. four miles E. of Gardeleben.

NEUENKIRCHEN, three towns of Germany: 1. in Saxe Lauenburg: 2. in Rietberg: 3. in Verden.

NEUENSTEIN, a town of Franconia.

* NEVER. *adv.* [*ne ever, nefre*, Saxon; *ne æfre, not ever.*] 1. At no time.—

Never, alas, the dreadful name
That fuels the infernal flames. *Cowley.*

—*Never* any thing was ſo unbred as that odious man. *Congreve.*

By its own force deſtroyed, fruition ceas'd,
And always weary'd, I was *never* pleas'd. *Prior.*

Death ſtill draws nearer, *never* ſeeming near. *Pope.*

2. It is uſed in a form of ſpeech handed down by the beſt writers, but lately accuſed, I think, with juſtice, of ſolecism; as, *he is miſtaken though never ſo wiſe.* It is now maintained that propriety requires it to be expreſſed thus, *he is miſtaken though* ever *ſo wiſe*; that is, *he is miſtaken* how-*wiſe* ſoever *he be.* The common mode can only be defended by ſupplying a very harſh and unprecedented ellipſis; *he is miſtaken though ſo wiſe*, as *never was any*: ſuch however is the common uſe of the word among the beſt authors.—Be it *never* ſo true which we teach the world to believe, yet if once their affections begin to be alienated, a ſmall thing perſuadeth them to change their opinions. *Hooker.*—Aſk me *never* ſo much dowry and gift. *Gen.* xxxiv. 12.—In a living creature, though *never* ſo great, the ſenſe and the affects of any one part of the body, inſtantly make a tranſcurſion throughout the whole body. *Bacon.*—They deſtroyed all, were it *never* ſo pleaſant, within a mile of the town. *Knolles.*—Death may be ſudden to him, though it come by *never* ſo ſlow degrees. *Duty of Man.*—He that ſhuts his eyes againſt a ſmall light, would not be brought to ſee that which he had no mind to ſee, let it be placed in *never* ſo clear a light, and *never* ſo near him. *Atterbury.*—That prince whom you eſpouſe, although *never* ſo vigorouſly, is the principle in war, you but

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but a fecond. *Swift.* 3. In no degree.—Whofoever has a friend to guide him, may carry his eyes in another man's head, and yet fee *never* the worfe. *South.* 4. It feems in fome phrafes to have the fenfe of an adjective, Not any; but in reality it is *not ever*.—He anfwered to him *never* a word. *Matt.* xxvii. 14. 5. It is much ufed in compofition: as, *never*-ending, having no end; of which fome examples are fubjoined.—Nature aſſureth us by *never*-failing experience, and reaſon by infallible demonſtration, that our times upon the earth have neither certainty nor durability. *Raleigh.*—

But a ſmooth and ſtedfaſt mind,
Gentle thoughts and calm deſires,
Hearts with equal love combin'd,
Kindle *never*-dying fires. *Carew.*

Ye myrtles brown, with ivy *never* ſear,
I come to pluck your berries harſh and crude.
Milton.

Your *never*-failing ſword made war to ceaſe.
Waller.

So corn in fields, and in the garden flow'rs,
Revive and raiſe themſelves with mod'rate ſhow'rs;
But overcharg'd with *never*-ceaſing rain,
Become too moiſt. *Waller.*

Our heroes of the former days
Deſerv'd and gain'd their *never*-fading bays.
Roſcommon.

Not Thracian Orpheus ſhould tranſcend the lays,
Nor Linus, crown'd with *never*-fading bays.
Dryden.

Leucippus, with his *never*-erring dart. *Dryd.*
Farewell, ye *never*-op'ning gates. *Dryden.*

He to quench his drought ſo much inclin'd,
May ſnowy fields and nitrous paſtures find,
And be refreſh'd with *never*-waſting food.
Blackmore.

Norton hung down his *never*-bluſhing head,
And all was huſh'd, as folly's ſelf lay dead. *Pope.*

What the weak head with ſtrongeſt bias rules,
Is pride, the *never*-failing vice of fools. *Pope.*

Thy buſy *never* meaning face,
Thy ſcrew'd up front, thy ſtate grimace. *Swift.*

NEVERDORP, a town of Holſtein.

NEVERN, a river of S. Wales, which runs into the ſea, two miles below Newport, in Pembrokeſhire.

NEVERS, a city of France, capital of the dep. of the Nievre, as it formerly was of the Nivernois, and government of Orleanois. It is ſeated on the Loire, which here receives the NIEVRE, from which this city derives its name. It is of great antiquity, ſuppoſed to be Cæſar's NOVIODUNUM in Æduis, where he erected magazines for his armies Francis I. made it a duchy and peerage in 1521, in favour of Francis of Cleve, to whom it came by marriage. It devolved afterwards to the houſe of Mantua, and then to the Palatine family, who in 1651 ſold it to Cardinal Mazarine. The cardinal obtained a title of duke and peer for his nephew Philip Mancini, in whoſe family it continued till the late revolution. The town is fortified with walls, and defended by many high towers and deep ditches. It has a ſtone bridge on the Loire, with 20 arches, a drawbridge on each ſide, and towers to defend them. It has 11 churches, and an elegant cathedral, dedicated to St. Cyr. The Jeſuits college near the gate of Ardeliers is a handſome ſtructure. The palace of the ci-devant dukes of Nevers has a large front between two great towers, with a court on one ſide and a garden on the other. Here John Caſimir king of Poland died, 16th December 1672. Near this palace ſtands the convent of Cordeliers, who had a magnificent church, in which the tombs of duke John and Catharine of Bourbon on the right, and thoſe of Lewis of Gonzaga duke of Nevers, and Henrietta of Cleves his wife, merit attention.—This town is famous for its manufactures of glaſs and earthen wares, and contains about 8000 inhabitants. In the centre of Nevers, on the ſummit of a hill, is the palace of the ancient dukes, conſtructed in the 16th century. Though beginning to decay, it is yet a model of the beauty and delicacy of the Gothic architecture. The apartments are hung with tapeſtry 200 years old, which have an air of groteſque and rude magnificence. There is in one of the chambers a portrait of Mad. de MONTESPAN, who appears riſing from a ſuperb couch, the curtains of which are drawn back, and ſupported by Cupids. (See MORTIMAR.) Nevers is 15 miles NW. of Moulins, and 75 E. of Orleans. Lon. 3. 14. E. Lat. 46. 59. N.

* NEVERTHELESS. *adv.* [*never the leſs.*] Notwithſtanding that.—They plead, that even ſuch ceremonies of the church of Rome as contain in them nothing which is not of itſelf agreeable to the word of God, ought *nevertheleſs* to be aboliſhed. *Hooker.*—Many of our men were gone to land, and our ſhips ready to depart; *nevertheleſs* the admiral, with ſuch ſhips only as could ſuddenly be put in readineſs, made forth towards them. *Bacon.*—God's making the world, irrefragably proves that he governs it too; or that a being of a dependent nature remains *nevertheleſs* independent upon him in that reſpect. *South.*

NEVERZIN, a town of European Turkey, in Dalmatia; 8 miles NNW. of Moſtar.

NEUFBOURG, a town of France, in the dep. of Eure; 12 miles NW. of Evreux, and 12 SW. of Louviers.

(1.) NEUFCHATEAU, a town of France, in the dep. of Vofges, and late prov. of Lorrain, ci-devant capital of Chatenoi. It is a handſome, populous, trading town, and is ſeated in a ſoil fertile in corn, wine, and all the neceſſaries of life, on the Mouzon. Lon. 5. 45. E. Lat. 48. 20. N.

(2.) NEUFCHATEAU, a town of France, in the dep. of Forets, and late prov. of Luxemburg; 12 miles NW. of Arlon.

(1.) NEUFCHATEL, a town of France, in the dep. of Aiſne, 11 miles ESE. of Laon, and 10½ N. of Rheims.

(2.) NEUFCHATEL, a town of France, in the dep. of the Lower Seine, on the Arques, famous for cheeſe; 20 miles SE. of Dieppe, 22 NE. of Rouen, and 75 NW. of Paris. Lon. 1. 30. E. Lat. 49. 46. N.

(3—5.) NEUFCHATEL. See NEUCHATTEL, N° 1—3.

NEUFELS, a town of Franconia, in Hohenlohe; 6 miles NE. of Ohringen.

NEUFFEN. See NEIFFEN.

NEUFMANIL,

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NEUFMANIL, a town of France, in the dep. of Ardennes; 3 miles NE. of Charleville.

NEUFMARCHE, a town of France, in the dep. of Eure; 9 miles N. of Gifors.

NEUFRAICH, a river of Suabia, which rifes near Walkenhofen, and runs into the Schmutter, one mile W. of Augfburg.

NEUGARDEN, or NEUGARTEN, } a town of Pomerania, with a ftrong fort, near Golnow.

NEUGRABEN, a river of Silefia, which runs into the Oder at Brieg.

(1.) NEUHAUS, a town of Bohemia, in the circle of Bechin, 8 miles N. of Fiftritz. It was taken by the Swedes in 1645.

(2—4.) NEUHAUS, 3 towns of Germany: 1. in Bavaria, 18 miles N. of Straubing: 2. in Weftphalia, 2 miles NNE. of Paderborn, the refidence of the bifhop: 3. on the E. bank of the Rhine, 11 miles SE. of Worms.

(1.) NEUHAUSEN, a town of Courland.

(2.) NEUHAUSEN, a town of Pruffia, in Samland.

NEUHAUSZ, 2 towns of Saxony: 1. in Bremen, on the Ofte: 2. in Coburg, 10 miles E. of Coburg.

NEUHEUSEL, a town of Hungary, on the Nitra, 64 miles E. of Vienna. It was taken by the Turks in 1663, and retaken by the imperialifts in 1685.

NEUHOF, 3 towns of Germany: 1. in Franconia, 12 miles N. of Anfpach: 2. in Fulda, 6 miles SW. of Fulda: 3. in Silefia, in Jauer, with a fort.

NEVIAN, a town of France, in the dep. of Aude; 4½ miles W. of Narbonne.

NEVILL'S BAY, a bay on the W. coaft of Labrador, W. of Hudfon's Bay.

NEVILL'S CROSS, a place in England, near Durham, where David II. King of Scots was defeated and taken prifoner, with many of his nobility, by the Engliih under Q. Philippa and Lord Percy, and 15,000 of the Scots were ilain.

(1—3.) NEUILLY, the name of 6 towns of France: viz. 1. in the dep. of Orne, 13¾ miles E. of Mortagne: 2. in that of Paris, 3 miles NW. of Paris: 3. in that of Yonne, 9 miles NW. of Axerre:—

(4.) NEUILLY L'EVEQUE, in the dep. of Upper Marne, and diftrict of Langres; 6 miles NE. of Langres:

(5.) NEUILLY LE REAL, in the dep. of Allier, and diftrict of Moulins; 9 miles SSE. of Moulins:

(6.) NEUILLY ST FRONT, in the dep. of Aifne, and diftrict of Chateau Thierry; 13½ m. S. of Laon.

NEVIN, NEFYN, or NEWIN, a town of N. Wales, in Caernarvonfhire, with a market on Saturday. In this town Edward I. in 1284, held his triumphal feftival on the conqueft of Wales; and to conciliate his new fubjects, held, in imitation of K. Arthur, a round table, with dances and tournaments; at which were preient the chief nobility of England, many foreign lords, and a vaft concourfe of people. Nevin is 6 miles W. of Pulhely, and 249 NW. of London.

(1.) NEVIS, one of the CARIBBEE ISLANDS, lying about 21 miles N. of Montferrat, and feparated from St Chriftopher's by a narrow channel. It makes a beautiful appearance from the fea, being a large conical mountain covered with fine trees, of an eafy afcent on every fide, and entirely cultivated. The circumference is about 21 miles, with a conliderable tract of level ground all around. The climate in the lower part is reckoned warmer than Barbadoes, but it is more temperate towards the fummit. The foil is very fine in the lower part, but coarfer above. The productions are nearly the fame with thofe of St Chriftopher. There are three pretty good bays, with towns in their vicinity; Charles-town, Moreton Bay, and Newcaftle. This pleafant ifland was fettled in 1628, by a colony under Sir Thomas Warner from St Chriftopher's. His fucceffor, Gov. Lake, was conlidered as the SOLON of this colony, in which he arranged every thing with fuch prudence, wifdom, and juftice, as procured him a high reputation with the French as well as Engliih. In the Dutch war they met with fome diiturbance from the French; but by being covered by an Engliih fquadron, the enemy were obliged to retreat, after a fmart engagement in fight of the ifland. Sir William Stapleton fometimes refided here, and Sir Nathaniel Johnfon conftantly. The population was then computed at 30,000. In the war after the revolution, they exerted themfelves gallantly, and had two regiments of 300 men each. In that of Q. Anne they behaved equally well, though they were lefs fortunate; for the French landing with a fuperior force, in 1706, and having inveigled moft of their ilaves, they were forced to capitulate. About 4000 of thefe ilaves the French carried away and ifold to the Spaniards, to work in their mines. The parliament, after making inquiry into the loffes they had fuftained, voted them about a third part of the fum which they had loft. Thefe loffes by war, an epidemic diieafe, and repeated hurricanes, exceedingly diminiihed the number of the people. They are now thought not to exceed 6000 whites, and 10,000 negroes. There is a lieutenant-governor, with a council, and an aifembly, which is compoied of three members from each of the five pariihes into which the ifland is divided. The commodities are cotton and fugar; and about 20 fail of ihips are annually employed in this trade.

(2.) NEVIS, a river of Scotland, in Inverneifhire, which rifes in BEN-NEVIS, runs through the valley of *Glen-nevis*, and, after a rapid courfe of 10 miles, in which it forms leveral romantic cataracts, falls into Lochiel, near Fort-William.

NEUKALDEN, a town of Mecklenburg.

NEUKIRCH, a town of Silefia, in Oppau.

(1.) NEUKIRCHEN, a town of Switzerland, in Schaffhauien; 5 miles W. of Schaffhauien.

(2—7.) NEUKIRCHEN, 6 towns of Germany: 1. in Auftria, 6 miles SE. of Engelhartzel: 2. in Bavaria, 10 miles E. of Cham: 3. in Bavaria, 13 miles SSE. of Nabburg: 4. in Heiie, 28 miles S. of Caiiel: 5. in Upper Saxony, 5 miles S. of Chemnitz: 6. in ditto, in Vogtland, 10 miles SE. of Oelnitz.

NEUMAGEN, a town of Germany, in the late electorate of Treves, now annexed to France, and included in the dep. of the Rhine and Moielle; ieated on the S. iide of the Moielle, 11 miles ENE. of Treves, and 42 SW. of Coblentz. Lon. 24. 12. E. of Ferro. Lat. 50. 0. N.

NEUMARCK,

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(1.) NEUMARCK, or } a town of Bavaria, in
(1.) NEUMARK, } the archbishopric of Saltzburg; 11 miles E. of Lauffen, and 12 NNE. of Saltzburg. In front of this town, the French republicans, under General Richepanse, defeated the rear guard of the Auftrian army under the Archduke Charles, on the 17th December 1800, and took General Lopez, with 600 men, prifoners, and 4 pieces of cannon.

(2.) NEUMARK, a town of Bavaria, in the Upper Palatinate, 22 miles SW. of Amberg, and 31 NW. of Ratifbon. In 1703, it was taken by the imperialifts, with a garrifon of 1400 men. Lon. 11. 32. E. Lat. 49. 14. N.

(3.) NEUMARK, or NEUMARCK, a town of the Tirolefe, 21 miles N. of Trent.

(4.) NEUMARK, or NEUMARCK, a town of Germany, in Stiria, 26 miles SW. of Judenburg, and 56 W. of Gratz. It was taken by the French in April 1797, after a bloody battle, in which the Auftrians were defeated, with the loft of 500 prifoners, and many killed and wounded.

(5—31.) NEUMARK, NEUMARCK, or NEUMARKT, the name of other 7 towns of Germany, viz. 1. in Bavaria, on the Both, 48 miles NE. of Munich: 2. in Carniola, 10 miles N. of Crainburg: 3. in Magdeburg, near Halle: 4. in Pruffia, in Culmerland, 6 miles E. of Culm: 5. in Silefia, 19 miles W. of Breflau: 6. in Upper Saxony, and in Pomerania, 12 miles W. of Colbach: 7. in Tranfylvania, on the Merifh, 36 miles N. of Clauffenburg. Lon. 23. 35. E. Lat. 47. 19. N.

NEUNDORF, a town of Saxony, in Vogtland; one mile SW. of Plauen.

NEUNKIRCHEN, a town of Franconia.

NEVONSKA, a town of Ruffia, in Irkutfk.

NEUPEURN, a town of Bavaria, 38 miles W. of Saltzburg, and 19 W. of Waterburg.

NEURADA, in botany, a genus of the decagynia order, belonging to the decandria claft of plants; and in the natural method ranking under the 13th order, *Succulenta*. The calyx is quinquepartite; there are 5 petals; the cap. is inferior, decemlocular, decaspermous and aculeated. There is only one fpecies, viz.

NEURADA PROCUMBENS. The whole plant is white and woolly: it fends off numerous ftalks in hairy direction, which lie flat on the ground: the leaves ftand on fhort foot-ftalks; they are of an ovalfhape, and plaited like thofe of the *ladies mantle*. It is a native of the warm climates, and found on dry parched grounds.

NEURI, an ancient nation of Sarmatia.

NEURITICS, *n. f.* in pharmacy, medicines ufeful in diforders of the nerves.

NEURODE, a town of Silefia, in Glatz.

NEUROGRAPHY, *n. f.* a defcription of the nerves. See ANATOMY, § 457—526.

(1.) * NEUROLOGY. *n. f.* [νευρον and λογος.] A defcription of the nerves.

(2.) NEUROLOGY. See ANATOMY, *Index*.

NEUROPTERA. See ZOOLOGY.

(1.) * NEUROTOMY. *n. f.* [νευρον and τεμνω.] The anatomy of the nerves.

(2.) NEUROTOMY. See ANATOMY, § 495—512.

NEUS, a large navigable river of N. Carolina, formed by the junction of the *Eno*ree, *Little*, and *Flat* rivers. After running SE. by E. through Orange, Wake, Johnfton, and Lenoir counties, it falls into the SW. end of Pamlico Sound. It is navigable in large fhips to Newbern; in flats 50 miles farther; and in fmall boats 200 miles.

NEUSALTZ, a town of Silefia, in Glogau.

NEUSATZ, a royal and free town of Hungary, feparated by the Danube from Peterwaradin. It is a Greek bifhop's fee.

NEUSCHLOSS, 3 towns of Bohemia: 1. in Konigingratz: 2. in Leitmeritz, 3 miles S. of Leypa: 3. in Saatz, 6 miles E. of Saatz.

(1.) NEUSIDL, a lake of Hungary, 13 miles long and 3 broad; 20 miles SE. of Vienna.

(2.) NEUSIDL, a town of Hungary, on the above lake; 24 miles SW. of Prefburg.

NEUSOL, a royal town of Upper Hungary, with a large caftle and tower, on the Gran, the chief of the mine towns. In the caftle is a church covered with copper. It has a market, 6 other churches, and rich copper mines and works. It is 10 miles NE. of Cremnitz, 50 NE. of Leopoldftadt, and 104 E. of Vienna. Lon. 19. 29. E. Lat. 49. 9. N.

(1.) NEUSTADT, a town of Auftria, 20 miles S. of Vienna, and 10 SE. of Baden. It was taken by Matthias Corvinus in 1485, and retaken in 1486. It has a manufacture of china. Lon. 34. 5. E. of Ferro. Lat. 47. 53. N.

(2.) NEUSTADT, a town of Bohemia.

(3.) NEUSTADT, a town of France, in the dep. of Mont Tonnere, and late palatinate of the Rhine, on the Hart. In 1576, it was taken by John Cafimir. It lies 14 miles W. of Spire, and 30 E. of Deux Ponts. Lon. 25. 45. E. of Ferro. Lat. 49. 16. N.

(4.) NEUSTADT, a circle of Germany, in Upper Saxony, containing 9 towns and 220 villages; bounded by Erzgeburg, Altenburg, Saalfield, and Reufs.

(5.) NEUSTADT, the capital of the above circle, (N° 4.) is feated on the Orla; has a citadel, 2 churches, and a mine office; and lies 44 miles SW. of Leipfic, and 80 SW. of Dreiden. Lon. 29. 26. E. of Ferro. Lat. 50. 30. N.

(6.) NEUSTADT, a town of Germany, in Wirtemburg, on the Kocher, 12 miles NE. of Hailbron. Lon. 9. 38. E. Lat. 49. 17. N.

(7—22.) NEUSTADT is alfo the name of 16 other towns in Germany: 1. in Bavaria, on the Danube, 16 miles E. of Ingoldftadt, and 40 N. of Munich: 2. in Brandenburg, on the Daffe, famous for plate glafs, 36 miles N. of Berlin: 3. in ditto, on the Finow canal, 28 miles NE. of Berlin: 4. in Franconia, in Culmbach, between the two forts of Culm, 12 miles SE. of Bayreuth: 5. in ditto, in Wurzburg, on the Saal, 32 miles NE. of Wurzburg: 6. in Holftein, with a caftle and harbour on the Baltic, 17 miles NE. of Lubeck, taken by the Swedes in 1644: 7. in the circle of the Lower Rhine, 12 miles E. of Marpurg, and 54 NE. of Mentz: 8. in Mecklenburg, 18 miles S. of Schwerin: 9. in Moravia, 10 miles N. of Olmutz: 10. in Lower Saxony and Calenberg, 12 miles WNW. of Hanover: 11. in Upper Saxony, in Erzgeburg, 6 miles NW. of Schwarzenburg: 12. in ditto, in Meiffen, 6 miles SE. of Stolpen: 13. in

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ditto, in Saxe-Coburg, 6 miles NE. of Coburg: 14. in Silesia, in Oppein, 14 miles SE. of Neisse: 15. in Westphalia, 25 miles E. of Cologn, and 26 SE of Bonne: 16. in Wolfenbuttel, 25 miles SE. of Goslar.

(23.) NEUSTADT, a town of Sweden, in Finland.

(1.) NEUSTATT, a town of Nassau Dillenburg.

(2.) NEUSTATT. See NEUSTADT, N° 6.

NEUSTRIA, the ancient name of NORMANDY, before it was ceded to Rollo by Charles the Simple. See FRANCE, § 20.

(1) NEUTEICH, a town of Prussia, in Culm.

(2.) NEUTEICH. a town of Silesia, in Oels.

(1.) * NEUTER. *adj.* [*neuter*, Latin; *neutre*, French.] 1. Indifferent; not engaged on either side.—The general division of the British nation is into whigs and tories; there being very few, if any, who stand *neuter* in the dispute. *Addison.* 2. [In grammar.] A noun that implies no sex.—The adjectives are *neuter*, and animal must be understood. *Dryden.*—A verb *neuter* is that which signifies neither action nor passion, but some state or condition of being; as, *sedeo*, I sit. *Clarke.*

(2.) * NEUTER. *n. s.* One indifferent and disengaged.—The learned heathens may be looked upon as *neuters* in the matter, when all these prophecies were new to them, and their education had left the interpretation of them indifferent. *Addison.*

(3.) NEUTER NOUNS, those which are neither masculine nor feminine. See GENDER. In English, and other modern tongues, there are no neuter nouns. See NOUN.

(4.) NEUTER VERBS, by some grammarians called *intransitive verbs*, are those which govern nothing, and that are neither active nor passive. See VERB. When the action expressed by the verb has no object to fall upon, but the verb alone supplies the whole idea of the action, the verb is said to be *neuter*: as I sleep, thou yawnest, he sneezes, we walk, ye run, they stand still. Some divide neuter verbs into, 1. Such as do not signify any action, but a quality; as *albet*, it is white; or a situation, as *sedet*, he sits: or have some relation to place; as *adest*, he is present; or to some other state or attribute, as *regnat*, he rules, &c. And, 2. Those that do signify actions, though such as do not pass into any subject different from the actor; as to dine, to sup, to play, &c. But this last kind sometimes cease to be *neuter*, and commence active; especially in Greek and Latin, when a subject is given them: as, *vivere vitam*, *ambulare viam*, *pugnare pugnam*. Thus the old French poets say, *Soupirer son tourment*; the English, to *sigh his woes*, &c. But this only obtains where something particular is to be expressed, not contained in the verb: as, *vivere vitam beatam*, to live a happy life; *pugnare bonam pugnam*, to fight a good fight, &c. According to the abbot Dangeau, neuter verbs may be divided into *active* and *passive*; the first, those that form their tenses in English, by the auxiliary verb *to have*; in French, by *avoir*. The second, those that form them in English with the verb *to be*; in French *etre*.—Thus to sleep, to yawn, *dormir* and *eternuer*, are *neuters active*.—To come, and to arrive, are *neuters passive*.

(1.) * NEUTRAL. *adj.* [*neutral*, French.] 1. Indifferent; not acting; not engaged on either side.—

Who can be wise, amaz'd, temp'rate and furious,
Loyal and *neutral*, in a moment? No man.
Shakesp.

—He no sooner heard that king Henry was settled by his victory, but forthwith he sent ambassadors unto him, to pray that he would stand *neutral*. *Bacon.*—The allies may be supplied for money, from Denmark and other *neutral* states. *Addison.* 2. Indifferent; neither good nor bad.—

Some things good and some things ill do seem,
And *neutral* some, in her fantastic eye. *Davies.*

3. Neither acid nor alkaline.—Salts which are neither acid nor alkaline, are called *neutral*. *Arbuthnot.*

(2.) * NEUTRAL. *n. s.* One who does not act nor engage on either side.—The treacherous who have misled others, and the *neutrals* and the false-hearted friends and followers, who have started aside like a broken bow, are to be noted. *Bacon.*

(3.) NEUTRAL SALTS, among chemists, those compounded of an acid with any other substance capable of uniting with it and destroying its acidity. Those in which the acid is saturated with an earth or a metal are called *imperfect*, but those in which a pure alkali is employed are called *perfect* neutrals. See CHEMISTRY, *Index*.

(1.) * NEUTRALITY. *n. s.* [*neutralite*, French.] 1. a state of indifference; of neither friendship nor hostility.—Men who possess a state of *neutrality* in times of public danger, defeat the interest of their fellow-subjects. *Addison.*—

The king, late griefs revolving in his mind,
These reasons for *neutrality* assign'd. *Garth.*

—All pretences to *neutrality* are justly exploded, only intending the safety and ease of a few individuals, while the public is embroiled. This was the opinion and practice of the latter Cato. *Swift.* 2. A state between good and evil.—

There is no health physicians say, that we
At best enjoy but a *neutrality*. *Donne.*

(2.) NEUTRALITY, ARMED. See ENGLAND, § 102.

* NEUTRALLY, *adv.* [from *neutral*.] Indifferently; on either part.

NEUVE-LIRE, a town of France, in the dep. of the Eure; 15 miles NNW. of Verneuil.

(1.) NEUVIE, a town of France, in the dep. of Correze: 10½ miles S. of Uffel, and 22 NE. of Tulles.

(2.) NEUVIE, a town of France, in the dep. of Dordogne, 12 miles SW. of Perigueux.

(1.) NEUVILLE, a town of Switzerland, in Basle; 7 miles SSW. of Bienne and 9 NE. of Neuchatel. In 1367, it held out a siege of 10 days against the Bernese, and afterwards entered into a league with them. In 1530 the inhabitants declared for the reformation, and have ever since adhered to it.

(2—7.) NEUVILLE, 8 towns of France; viz. 1 in the dep. of the Aube, *on the Seine*, 4½ miles S. of Bar: 2. in that of Oise, 9 miles NE. of Clermont: 3. in that of Rhone and Loire, 6 miles N. of Lyons: 4. in that of the Straits of Calais, on the

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the Canche, oppoſite Montreuil: 5. in that of Vienne, 6 miles S. of Mirebeau: 6. in that of Upper Marne, 8 miles E. of St Didier:—

(8.) NEUVILLE AU PONT, in the depart. of Marne, 3 miles NW. of St Menehould:

(9.) NEUVILLE AUX BOIS, in the dep. of Loiret, 12 miles N. of Orleans, and 10½ SW. of Pithiviers.

(1.) NEUVILLER, a town of France, in the dep. of the Lower Rhine, 15 miles W. of Haguenau.

(2.) NEUVILLER, a town of France, in the dep. of Meurthe, 7½ miles E. of Vezelize, and 9 SW. of Luneville.

(1—5.) NEUVY, 6 towns of France: 1. in the dep. of the Cher, 16½ miles NNW. of Bourges: 2. in that of Indre, 9 miles W. of Chatre: 3. in that of Indre and Loire, (ci-devant Le Roy,) 13 miles N. of Tours; 4. in that of Nievre, 7 miles N. of Coſne: 5. in that of Yonne, 19½ miles SW. of Troyes:—

(6.) NEUVY PAILLOU, in the dep. of Indre; 7 miles SW. of Iſſoudun, and 7½ NW. of Chateauroux.

NEUWALD, a town of Sileſia, in Nieſſe.

NEUWIED, or NEW WIED, a neat trading town of Germany, in the circle of Weſtphalia, and county of Wied Runkel, on the E. bank of the Rhine, 4 miles below Coblentz. It has a good harbour, and generally about 20 ſhips in it. It was taken by the French under Gen. Ernouf, on the 7th July 1796, after a bloody battle: and on the 21ſt Oct. 1796, the Auſtrians were again defeated by the French, at the bridge of this town, with the loſs of 4000 men.

(1.) * NEW. *adj.* [*newyd*, Welſh; *neoth*, Sax. *neuf*, Fr.] 1. Not old; freſh; lately produced, made or had; novel. *New* is uſed of things, and *young* of perſons.—

What's the *neweſt* grief?—

—That of an hour's age doth hiſs the ſpeaker;
Each minute teems a *new* one. *Shak.*

2. Not being before.—Can we ever know more, unleſs ſomething *new* be diſcovered? *Burnet.* 3. Modern; of the preſent time.—Whoever converſes much among old books, will be ſomething hard to pleaſe among *new*. *Temple.* 4. Different from the former.—Steadfaſtly purpoſing to lead a *new* life. *Common Prayer.* 5. Not antiquated; having the effect of novelty.—

Theſe ever *new*, nor ſubject to decays,
Spread and grow brighter with the length of days. *Pope.*

6. Not habituated; not familiar.—Such aſſemblies, though had for religion's ſake, may ſerve the turn of heretics, and ſuch as privily will inſtil their poiſon into *new* minds. *Hooker.*—

Seiz'd with wonder and delight,
Gaz'd all around me, *new* to the tranſporting ſight. *Dryden.*

Twelve mules, a ſtrong laborious race,
New to the plough, unpractis'd in the trace. *Pope.*

7. Renovated; repaired, ſo as to recover the firſt ſtate.—Men, after long emaciating diets, wax plump, fat, and almoſt *new*. *Bacon.* 8. Freſh after any thing.—

Nor dare we truſt ſo ſoft a meſſenger,
New from her ſickneſs to that northern air. *Dryden.*

9. Not of ancient extraction.—A ſuperior capacity for buſineſs, and a more extenſive knowledge, are ſteps by which a *new* man often mounts to favour, and outſhines the reſt of his contemporaries. *Addiſon.*

(2.) * NEW. *adv.* This is, I think, only uſed in compoſition for *newly*, which the following examples may explain.—As ſoon as ſhe had written them, a new ſwarm of thoughts ſtinging her mind, ſhe was ready with her foot to give the *new*-born letters both to death and burial. *Sidney.*—God hath not then left this to chuſe that, neither would reject that to chuſe this, were it not for ſome *new*-grown occaſion, making that which hath been better worſe. *Hooker.*—

So dreadfully he towards him did paſs,
Forelifting up aloft his ſpeckled breaſt,
And often bounding on the bruiſed graſs,
As for great joyance of his *new*-come gueſt. *Spenſer.*

Your maſter's lines
Are full of *new*-found oaths; which he will break
As eaſily as I do tear this paper. *Shak.*

Will you with thoſe infirmities ſhe owes,
Unfriended, *new*-adopted to our hate,
Dower'd with our curſe, and ſtranger'd with our oath,
Take her or leave her? *Shak.*

Leaſt by a multitude
The *new*-heal'd wound of malice ſhould break out. *Shak.*

Now hath my ſoul brought forth her prodigy,
And I a gaſping, *new* deliver'd mother,
Have woe to woe, ſorrow to ſorrow join'd. *Shak.*

He ſaw heav'n bloſſom with a *new*-born light,
On which, as on a glorious ſtranger gaz'd
The golden eyes of night. *Craſhaw.*

I've ſeen the morning's lovely ray
Hover o'er the *new*-born day. *Craſhaw.*

Some tree, whoſe broad ſmooth leaves together ſew'd,
And girded on our loins, may cover round
Thoſe middle parts; that this *new*-comer ſhame,
There ſit not, and reproach us as unclean. *Milt.*

Their father's ſtate,
And *new*-entruſted ſceptre. *Milton.*

The *new*-created world, which fame in heav'n
Long had foretold. *Milton.*

His evil
Thou uſeſt, and from thence creat'ſt more good,
Witneſs this *new*-made world. *Milton.*

All in that *new*-blown age which does inſpire
Warmth in themſelves, in their beholders fire. *Cowley.*

—That it ſhould always run them into ſuch a machine as is already extant, and not often into ſome *new*-faſhioned one, ſuch as was never ſeen before, no reaſon can be aſſigned or imagined. *Ray on the Creation.*—This Engliſh edition is not ſo properly a tranſlation, as a new compoſition, there being ſeveral additional chapters in it, and ſeveral *new*-moulded. *Burnet.*—*New*-found land

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accrue to the prince whose subject makes the first discovery. *Burnet.*—

Let this be nature's frailty, or her fate,
Or Isgrim's counsel, her *new* chosen mate *Dryd.*

Shewn all at once you dazzled so our eyes,
As *new*-born Pallas did the gods surprise;
When springing forth from Jove's *new*-closing wound,
She struck the warlike spear into the ground. *Dryden.*

A bird *new*-made, about the banks she plies,
Not far from shore. *Dryden.*

Our house has sent to-day
T' insure our *new*-built vessel, call'd a play. *Dryden.*

Then curds and cream,
And *new*-laid eggs, which Baucis' busy care
Turn'd by a gentle fire. *Dryden.*

When pleading Matho, borne abroad for air,
With his fat paunch fills his *new*-fashion'd chair. *Dryden.*

A *new*-form'd faction does your power oppose,
The fight's confus'd: *Dryden.*

If thou ken'st from far
Among the Pleiads a *new*-kindled star. *Dryden.*

—If we consider *new*-born children, we shall have little reason to think that they bring many ideas into the world with them. *Locke.*—

Drummers with vellom-thunder shake the pile
To greet the *new*-made bride. *Gay.*

Ah Blouzelind! I love thee more by half,
Than does their fawns, or cows the *new*-fall'n calf. *Gay.*

—The proctor exhibits his proxy from the dean and chapter, and presents the *new*-elected bishop to the vicar-general. *Ayl.*—

The *new*-fallen young here bleating for their dams. *Pope.*

Learn all the *new*-fashion'd words and oaths. *Swift.*

(3.) NEW, in geography, a river of N. Carolina, which rises from North East Swamp, in Ouslow county, and runs through a fertile tract into the Sea. It abounds with mullets.

(1.) NEWABBEY, an ancient abbey of Ireland, near Kilcullen bridge, in the county of Kildare, and prov. of Leinster. It was founded by Rowland Eustace, of a great and ancient family in this county; the tower is still standing, and some part of the abbey; the ruins of the rest have contributed to build several dwellings near it. In the inside Rowland Eustace and his lady lie buried; their figures, clothed in armour, are to be seen there. Near this is a handsome seat of the Carter family, on the opposite side of the Liffey.

(2.) NEWABBEY, a parish of Scotland, in Kirkcudbrightshire, anciently called *Kirkinnar*, or *the Church among the Oaks*; affording a fine prospect of the English coast, Solway Firth, &c. It is 8 miles long and 2½ broad, containing 7810 Scots acres; whereof 2000 are arable, 500 meadow ground, 250 under plantations, 60 under natural wood, and 5000 hill, moor, and moss. Hence the surface and soil are various. The low grounds along the Nith are inclosed and highly improved; the soil a light loam; that of the high grounds a cold till, but both fertile; producing all the usual crops to the amount of L.6615 yearly, great part of which is exported. The climate is healthy. The population, in 1790, was 649; increase 15, since 1755; number of sheep, 3500; and of black cattle 1000. High multures still retard improvements. There are 3 small lakes in the parish.

(3.) NEWABBEY, a village in the above parish, adjoining to the ruins of an ancient Cistertian *abbey*, which gave name to it, and which was founded in the 12th century, by Dervigilla, daughter of Alan lord of Galloway, wife of John Baliol lord of Castle-Bernard, and mother of John Baliol, King of Scotland. It was first named *Abbey of Sweet-Heart*, from her husband's heart being embalmed, inclosed in a box of ivory mounted with silver, and built into the wall of the church. The abbey is a lofty Gothic building; its church is 194 feet long, 102 broad at the cross and 66 at each end; the tower is above 90 feet high. The village contained 210 inhabitants in 1790.

NEW ABERDEEN. See ABERDEEN, N° 2.

(1.) NEWARK, a town of New Jersey, capital of Essex county, built in 1662, near the mouth of the Passaick. It has 3 churches, an academy, 9 tanneries, a cyder distillery, and an extensive shoe manufactory, to the amount of 60,000 pairs annually. It has also some valuable stone quarries. It is 9 miles W. of New York, and 86 NE. of Philadelphia. Lon. 75. 12. W. Lat. 40. 32. N.

(2.) NEWARK, a town of Delaware in Newcastle county, 9 miles W. of Newcastle.

(3.) NEWARK, a township of Vermont in Essex county.

(4.) NEWARK, a town of Upper Canada, opposite Niagara.

(5.) NEWARK, a barony of Scotland, in Renfrewshire, united to PORT GLASGOW.

(6.) NEWARK, or NEWARK UPON TRENT, a town of Nottinghamshire, a great thoroughfare on the York road, 124 miles from London. It has bridges over the Trent, which forms an island here, by dividing itself into two streams, two miles above the town, which meet again two miles below it. A magnificent castle was built here in the reign of King Stephen, which held out stoutly in the barons wars for King John, who died here, Oct. 19th 1216. On the 21st March 1544, the royalists under Pr. Rupert were defeated by the parliament's army under Sir John Meldrum. The town, however, stood out for K. Charles I. to the last; but after he had put himself into the hands of the Scots army then before it, the governor by his order surrendered it, after which the castle was demolished.—It was situated near the river; the walls of the towers are very thick, and of a very great height: and were formerly of great importance. In the court before these ruins is a fine bowling green, and near it a manufactory of sacking. The town being subject to inundations from the Trent, and thus often rendered impassable, a turnpike-road was made about 30 years ago, so high as to be passed with safety in the greatest floods, by arches of brick made in several places to carry off the water, constructed by Mr Smeaton, at the expence of L.12,000. Near the town there is a bridge constructed

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ſtructed for the ſame purpoſe, moſtly upon dry land, conſiſting of 9 arches. It has a neat though ſmall new ſtreet, and a market-place handſome, though not ſpacious. Its church, which is reckoned one of the fineſt in the kingdom, was built by Henry VI, and has a lofty ſpire. It was incorporated by King Charles II. under a mayor and 12 aldermen.—The ſame king, for its loyalty to his father, gave it the privilege of ſending members to parliament. It has a good trade in corn, cattle, wool, &c. and has a charity-ſchool for 36 boys. Its market is on Wedneſday; fairs on the Friday before Paſſion-Sunday, May 14th, Whit-Tueſday, Aug. 12th, Nov. 1ſt, and Monday before Dec. 11th. It had an abbey of Auguſtine friars. A free-ſchool was founded here, endowed with the lordſhip of Everton in this county; and the vicar of Newark, and the brethren of the Trinity-guild, were made perpetual truſtees. Many Roman urns and other antiquities have been found about this town. It is 17 miles NE. by E. of Nottingham, and 124 N. by W. of London. Lon. 0. 43. W. Lat. 53. 6. N.

NEW ATHENS, or TIOGA POINT, a town of Pennſylvania, in Luzerne county, on the cape formed by the conflux of the Tioga and Suſquehannah, 3 miles S. of the New York Line, and 14 SW. of Oſwego. Lon. 76. 32. W. Lat. 41. 54. N.

(1.) NEWBATTLE, a pariſh of Mid Lothian, of a triangular form, 4 miles long and 4 broad. The ſurface and ſoil are various; and the extremes of fertility and barrenneſs border on each other. Coals and lime-ſtone abound. The population in 1793 was 1295; decreaſe 144 ſince 1755.

(2.) NEWBATTLE, a village in the above pariſh, 7 miles S. of Edinburgh, and one of Dalkeith. Near it lies Newbattle Abbey, the ſeat of the Marquis of Lothian, a large modern building erected on the ſide of an ancient Ciſtertian Abbey founded by K. David I. Its library contains ſeveral beautiful ancient MSS. on vellum, highly illuminated.

NEW BEDFORD, a town and townſhip of Maſſachuſetts in Briſtol county, 13 miles long, and 4 broad, 58 miles S. of Boſton. During the war in 1778, it ſuffered damage to the amount of L. 97,000. It is now flouriſhing, and had 3313 citizens in 1795. It is one mile from Fairhaven, and 357 NE. by E. of Philadelphia.

(1.) NEWBERN, a maritime diſtrict of N. Carolina, bounded from W. to E. by thoſe of Wilmington, Fayette, Hillſborough, Halifax, and Edenton; and E. and SE. by the Atlantic: containing 39,640 citizens, and 15,900 ſlaves in 1795.

(2.) NEWBERN, the capital of the above diſtrict, is ſeated in Craven county, at the conflux of the Neus and Trent. It contains above 400 houſes.

NEWBIGGIN, a town of Northumberland on the E. coaſt, 7 miles E. of Morpeth.

NEWBLISS, a town of Ireland, in Monaghan, Ulſter.

NEWBORN. See NEWBURN, N° 3.

(1.) NEWBOROUGH, or NEWBURGH, a town of N. Wales, in the Iſle of Angleſey, 257 miles from London, ſituated over againſt Caernarvon, about 15 miles SW. of Beaumaris. It is governed by a mayor, two bailiffs, and a recorder. Its Welch name is RHOSSIR, or *Rhoſvair*. Its markets are on Tueſday; and its fairs on the 22d June, Aug. 10th and 21ſt, Sept. 25th, and Nov. 11th. Lon. 4. 27. W. Lat. 53. 10. N.

(2.) NEWBOROUGH, a town of Ireland, in Wexford, 21 miles N. of Wexford, and 39 S. of Dublin.

NEWBOTTLE. See NEWBATTLE, N° 1 & 2.

NEWBRIDGE, 4 towns of Ireland, in the counties of Cork, Kildare, Limeric, and Wicklow.

NEW BRITAIN. See BRITAIN, N° III. and IV.

NEWBURG. See NEUBURG, N° 1—9.

(1.) NEWBURGH, a pariſh of Scotland, in Fifeſhire, of which it is the NW. boundary. The Tay waſhes it on the N. The climate is cold but healthy; the ſoil various but fertile; producing good crops of oats, barley, wheat, and beans. The population in 1793 was 1664; increaſe 317 ſince 1755. The only antiquities are two rude ancient monuments, called the croſſes of *Mugdrum* and *Macduff*; and the ruins of the abbey of Lindores.

2. NEWBURGH, a royal burgh in the above pariſh, erected by Charles I, in 1631; conſiſting of one long ſtreet on the S. bank of the Tay, with ſuburbs at each end, and a lane leading to the ſhore. Many of the houſes have been lately rebuilt. Weaving of Sileſias, Oſnaburgs, and brown linens, is the chief manufacture. It has fairs on the 3d Friday in June, and the 25th Nov. O. S. On the ſhore are 3 continuous piers, projecting into the Tay, which form very ſafe ſtations for veſſels employed in the trade on the river; many of which unload part of their cargoes here before they proceed up to Perth. A trade in wood and iron is alſo carried on at the ſhore; and wheat, barley, and malt, are exported to Edinburgh and Glaſgow. Newburgh is 8 miles N. of Falkland, and 10 SE. of Perth.

(3.) NEWBURGH, a village of Aberdeenſhire, in the pariſh of Foveran, at the mouth of the Ythan, half way between Aberdeen and Peterhead, formerly containing 200 inhabitants and ſeven fiſhing boats, but now only one boat, and not above 100 people. Though ſituated in a good corn country, in a commodious ſituation for importing lime, coals, &c. and exporting grain, it has been moſt unaccountably neglected.

(4.) NEWBURGH. See NEWBOROUGH, N° 1.

(1.) NEWBURN, a pariſh of Fifeſhire, on Largo Bay, in the Frith of Forth, 3½ miles long, and 2 broad. The ſoil is very fertile, and produces excellent crops of wheat, turnips, potatoes, &c. The land is moſtly all incloſed. The population, in 1794, was 456; increaſe 18 ſince 1755. The ſchool is in conſiderable reputation. The CULDEES, the firſt regular clergy in Scotland, had a church in this pariſh ſo early as the reign of Malcolm Canmore. Hungus, king of the Picts, was their benefactor; and Brude, the laſt Pictiſh monarch, gave them Loch-leven; and Malcolm and his queen St Margaret gave them the village of Balchriſtie in this pariſh.

(2.) NEWBURN, a town in the above pariſh, 8 miles SSW. of St Andrews.

(3.) NEWBURN UPON TYNE, a village of Northumberland, 6 miles W. of Newcaſtle, and 272 N. of London; chiefly inhabited by miners. In 1640, a part of the royal army under lord Con-

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way were defeated near it by the Scots under Gen. Leſlie.

(1.) NEWBURY, a town of Berks, 16 miles W. of Reading, and 56 of London. It aroſe on the decay of Spinham Land. It is as old almoſt as the Conqueſt. It made ſo much broad cloth formerly, that in the reign of Henry VIII. John Winſcomb, commonly called *Jack of Newbury*, one of the greateſt clothiers that ever was in England, kept 100 looms in his houſe; and in the expedition to Flowden-field againſt the Scots, marched with 100 of his own men, all armed and clothed at his own expenſe; and he built all the weſt part of the church. Mr Kenric, the ſon of a clothier here, afterwards a merchant in London, left L. 4000 to the town, and L. 7500 to Reading, to encourage the woollen manufactory. It ſtill makes a great quantity of ſhalloons and druggets, but not ſo much broad cloth as formerly; yet it is a flouriſhing town with ſpacious ſtreets, and a large market-place, in which is the guild-hall. The church is of ſtone, built about 1640. It has 7 ſets of alms-houſes. In the neighbourhood, on the banks of the Kennet, there is a ſtratum of petrified wood dug out for firing, where they frequently find trunks of large oaks undecayed, with petrified hazel nuts, fir-cones, &c. with the bones and horns of ſtags, antelopes, &c. tuſks of boars, and heads of beavers. The Kennet, which abounds with excellent trouts, eels, and cray-fiſh, runs through the town; which abounds with all other proviſions. It was made a corporation by Q. Elizabeth, and is governed by a mayor, high ſteward, aldermen, &c. It ſends a great quantity of malt to London, has good inns, and has a charity ſchool for 40 boys. Its market is on Thurſday; and fairs on Holy Thurſday, July 5th, Aug. 24th. and Oct. 28th. Lon. 1. 12. W. Lat. 51. 25. N.

(2.) NEWBURY, a county of S. Carolina.

(3.) NEWBURY, or NEWBOROUGH, a flouriſhing town of New York, in Ulſter county, on the W. ſide of the Hudſon, 88 miles N. of New York, and 183 S. of Albany.

(4.) NEWBURY, a town of Vermont, the capital of Orange county, on the W. ſide of the Connecticut. It has a court houſe and a handſome church for congregationaliſts, with a ſteeple, the firſt erected in the ſtate. It is 130 miles NE. of Bennington, and 415 NE. by N. of Philadelphia.

(5.) NEWBURY PORT, a ſea port of Maſſachuſetts, in Eſſex county, on the S. bank of the Merrimach, 4 miles from its mouth. In 1795, it contained a court-houſe, 5 churches, 616 houſes, and 4837 citizens, with ſeveral well endowed ſchools. In Nov. 1790, it had 6 ſhips, 45 Ligantines, 39 ſchooners, and 28 ſloops; carrying 11,870 tons. It is 30 miles NE. of Boſton, and 391 of Philadelphia. Lon. 70. 52. W. Lat. 42. 48. N.

(1.) NEWBY, a ſmall town in Cumberland.

(2—7.) NEWBY, 6 villages in Yorkſhire; viz. 1. E. of Bedall, upon the Wiſk: 2. in Richmond, upon the Swale: 3. near Scarborough: 4. near Settle: 5. NW. of Stokeſley: 6. SW. of Thirſk.

NEWBYTH, a village of Aberdeenſhire, in the pariſh of King Edward, founded in 1764, by the late James Urquhart of Byth, Eſq; who, upon that occaſion, "raiſed the rent of his eſtate nearly to 5 times what it was in 1731." It has a chapel of eaſe, and, in 1793, contained 195 inhabitants.

NEW CANTON, a town of Virginia, in Buckingham county, on the S. ſide of James river, 70 miles above Richmond.

(1.) NEWCASTLE, Ducheſs of. See MARGARET, N° 3.

(2.) NEWCASTLE, duke of. See CAVENDISH. N° 5.

(3.) NEWCASTLE, a county of the United States of America, in Delaware; bounded E. by the Delaware, S. by Kent county, W. by the State of Maryland, and N. by that of Pennſylvania. It is 47 miles long, and 20 broad; and, in 1795, contained 17,124 citizens, and 2,362 ſlaves. It had then about 70 mills, viz. 60 for grain, 4 for paper, 2 for ſnuff, and ſeveral for ſlitting, fulling, and other manufactures. Its chief towns are NEWCASTLE, N° 4, and Wilmington.

(4.) NEWCASTLE, one of the capitals of the above county, and the oldeſt town on the Delaware, lies 33 miles SW. of Philadelphia, on the W. bank of the river. It was firſt ſettled by the Swedes about 1627, and called *Stockholm*. It was afterwards taken by the Dutch, and called *New Amſterdam*. When it fell into the hands of the Engliſh, it was called by its preſent name. It was formerly the ſeat of government; afterwards declined, but is now flouriſhing. It has 2 churches, a court houſe, and 2 piers, which afford a ſafe retreat to ſhips. Lon. 75. 35. W. Lat. 39. 38. N.

(5.) NEWCASTLE, a poſt town of Maine, in Lincoln county; 192 miles from Boſton, and 297 from Philadelphia.

(6.) NEWCASTLE, a poſt town of Virginia, in Hanover county, on the SW. bank of the Pamunky; 14 miles NE. of Richmond, 54 NW. of Williamſburg, and 297 from Philadelphia. Lon. 2. 15. W. of that city. Lat. 37. 44. N.

(7.) NEWCASTLE, a borough of Ireland, in the county of Dublin, which has two fairs, 9th May and 8th October. It is 10 miles SW. of Dublin.

(8.) NEWCASTLE, a handſome town of Ireland, in Limerick, on the road to Kerry, 114 miles from Dublin. Here was a religious houſe poſſeſſed by the knights templars. It is ſaid they uſed ſome barbarous cuſtoms, which greatly diſguſted the Iriſh, who, watching a favourable opportunity, attacked a number of the knights riding out together, and put them to death: the place is ſtill remembered where their remains were interred. This order was ſuppreſſed in the famous council of Vienna, 22d of March 1312. Newcaſtle conſiſts of a large ſquare, where markets and fairs are held; on the N. ſide ſtands a market houſe, with an aſſembly-room; on the S. ſide is a church, which is the neateſt in the county, finiſhed at the ſole expenſe of Lord Courtenay. It ſtands cloſe to the walls and fortifications of the knights templars, of which one of the caſtles is fitted up for Lord Courtenay's agent.

(9—12.) NEWCASTLE is alſo the name of 4 ſmall towns of Ireland, in Down, Dublin, Meath, and Waterford.

(13.) NEWCASTLE, a village of Salop, near Clun Foreſt.

(14.) NEWCASTLE, a town of S. Wales, in Caermarthenſhire, on the Tivy, with an old fort, and

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and a market on Friday; 17 miles NW. of Caermarthen, and 219 WNW. of London. Lon. 4. 30. W. Lat. 52. 4. N.

(15.) NEWCASTLE, a town on the N. coaſt of the iſle of Nevis; 6 miles NNE. of Charleſtown.

(16.) NEWCASTLE BAY, a large bay of the Pacific Ocean, on the NE. coaſt of New Holland.

(17.) NEWCASTLE UNDER LINE, a town of Staffordſhire, on a branch of the Trent, 15 miles N. of Stafford, 33 SSE. of Warrington, and 149 NNW. of London. It had a caſtle, now in ruins; and is ſo called from an older caſtle, which formerly ſtood two miles off, at Cheſterton under Line. It was incorporated by Henry I. and again by Q. Elizabeth and Charles II. and is governed by a mayor, two juſtices, two bailiffs, and 24 common councillors. The cloth trade flouriſhes here; but its chief manufactory is hats. The ſtreets are broad and well paved, but moſt of the buildings low and thatched. The market is on Monday; fairs on Eaſter-Monday, Whit-Monday, July 6, firſt Monday in Sept. and Nov. 6, for cattle. It has alſo a great market for beaſts every other Monday. The corporation has a court, which holds pleas for actions under L.40. Its caſtle, of which there is little to be now ſeen, was built in the reign of Henry III. It had four churches formerly, now reduced to one, the town having ſuffered much in the barons wars. There are frequent horſe-races in the neighbourhood, though it is ſurrounded with coal pits; particularly one at Hamley Green. It is ſofter than the cannel-coal, and is cut out in ſlices; but conſumes ſo faſt, that it is only fit for forges. The greateſt quantity of ſtoneware is made near this place of any part of England; ſo that, one year with another, they are ſaid to export 20,000l. worth of it. Lon. 2. 2. W. Lat. 53. 12. N.

(18.) NEWCASTLE UPON TYNE, the capital of the county of Northumberland, 14 miles NW. of Durham, 94 N. of York, 63 S. by E. of Berwick, 60 E. of Carliſle, 271 N. by E. of London. It is ſeated at the end of the Picts wall, on the N. ſide of the Tyne, over which it has a ſtately bridge into the biſhopric of Durham, in which its ſuburb called *Gateſide* is ſituated; for the liberties of Newcaſtle extend no farther than the great iron gate upon the bridge, which has the arms of the biſhop of Durham carved on the E. ſide, and thoſe of Newcaſtle on the W. ſide. It is admitted to have been a Roman ſtation, though no evidence now appears, except at Pandon-gate, whoſe ſuperſtructure is of different workmanſhip and model from any others of the town, the arches being circular. The carpenter's tower is alſo of Roman original. In the Saxons time it was called *Monckeſter*, from the monks here, who all fled when it was depopulated by the Danes; and afterwards *Newcaſtle*, from a caſtle built here by William the Conqueror's ſon, Robert, in 1080, to defend the country againſt the Scots, whoſe kings had this town before the Norman conqueſt, and ſometimes reſided in it. Several monaſteries and houſes were built ſoon after the caſtle; and it was greatly enlarged and enriched by a good trade to the coaſts of Germany, and by the ſale of its coal to other parts of England; for which, and other merchandize, it is the great emporium of the N. of England, being the largeſt town in thoſe parts, next to York. In the reign of Edward I. it was burnt by the Scots; but a very rich burgher who was taken priſoner, ſoon ranſomed himſelf for a good ſum of money, and began the firſt fortifications of the place, which he extended from Sandgate to Pampedon, and thence to the Auſtin friars gate; which the townſmen finiſhed, and encompaſſed with ſtout walls, two miles in extent, wherein are 7 gates and many turrets, with ſeveral caſements bomb-proof. Two other gates were added in modern times, viz. Bridgegate and Sandgate. It is a borough at leaſt as ancient as king Richard II. who granted that a ſword ſhould be carried before the mayor; and king Henry VI. made it a town and county incorporate of itſelf, independent of Northumberland. Henry VII. built a monaſtery here for the Franciſcans; beſides which, it had ſeveral other religious foundations, which have been converted into companies halls. In the reign of Henry VIII. this city is ſaid to have exceeded, in the ſtrength and magnificence of its works, all the cities of England, and moſt places in Europe. It is governed by a mayor, 12 aldermen, a recorder, ſheriff, town-clerk, a clerk of the chambers, 2 coroners, 8 chamberlains, a ſword-bearer, a water-bailiff, and 7 ſerjeants. Its ſituation towards the river is very uneven, being built upon the declivity of a ſteep hill; and the houſes very cloſe. The caſtle overlooks the whole town. That part built by Robert was of great ſtrength, and ſurrounded by two walls: the ſquare was 62 feet by 54, and the walls 13 feet thick, within which was a chapel. The outward fortifications are now defaced, and their ſite crowded with buildings. The tower remains entire, on a lofty eminence. This caſtle belongs to the county, is now the county priſon, and in the great hall the judges hold their aſſizes. Here John Baliol king of Scotland did homage to king Edward I. 1292; as did Edward Baliol in 1334 to king Edward III. Here is a magnificent exchange and a cuſtom-houſe; and the fineſt quay in England, except that at Yarmouth, being 700 yards long. There is a handſome manſion-houſe for the mayor, who is allowed 1000l. a-year, beſides a coach and barge. The old bridge was carried away in a flood, and the preſent was erected about 1775, of 9 noble elliptic arches. With the old bridge 22 houſes were thrown down, and 6 lives loſt. It was originally built of wood; but having been burnt in 1248, was rebuilt of ſtone, of 12 arches, three of which on the N. ſide were cloſed up, and ſerved for cellars. It was rebuilt about 1450, and crowded with wooden buildings; but near the middle was a tower with an iron gate, uſed as a priſon. A ſtrong building croſſed the bridge, which was uſed as a magazine. On the S. front was a ſtatue of king Charles II. The water which deſtroyed this bridge, on Nov. 11, 1771, was upwards of 12 feet above high water mark in ſpring tides. On deſtroying the piers of the old bridge to erect the preſent, from medals found, part of it appears to have exiſted from the time of the Romans. Above 6000 keelmen are employed here, who have formed themſelves into a friendly ſociety; and, by their contributions, built a noble hoſpital, containing 50 chambers, for

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for such of their fraternity as are poor or infirm. The town is populous, and there are many poor; but it has many wealthy inhabitants, who pay above 4000l. a-year to their relief. It has the greatest public revenue of any town in England, it being computed at no less than 8000l. a-year. In 1774, the receipts of the corporation were 20,360l. 9s. 8d.; and their disbursements about 19,445l. The number of inhabitants far exceeds 30,000. Here are four churches. That of St Nicholas is a curious fabric, built as a cathedral by David I. king of Scots, 240 feet long, 75 broad, and proportionably high, with a tower steeple, 194 feet in height, of Gothic architecture. St Andrew's, St John's, and All Saints, were lately rebuilt on the site of the old structures of a circular form. Here are also several meeting houses, and four charity schools for 300 children; a fine hall for the surgeons, and a large prison called *Newgate*; also an hospital for lunatics, another for the lying-in of married women, with a fund raised for the relief of those who are delivered at their own houses. Here are a well endowed and large infirmary, an assembly room, and a ball room 93 feet by 40: the front is ornamented with six Ionic pillars, &c. In another part of the town is a new theatre. Here is a very neat set of baths. A free grammar school was granted by James I. from an old foundation of St Mary's hospital. There were formerly several palaces in this city. The free masons have an elegant hall, richly ornamented, near Highfriar chair, capable of holding above 4000 brethren. Here is an hospital for 30 decayed freemen and their widows; and another for the widows of three clergymen and three merchants. The Maiden's hospital, built in 1753, is endowed with 240l. for six maidens and six poor men. Dr Thomlin, a prebendary of St Paul's, and rector of Whicham in Durham, gave a library of above 6000 valuable books to the corporation, and settled 5l. a-year for ever for buying new ones; and Walter Blackett, Esq. member of parliament, built a neat repository for them, and settled 85l. a-year on a librarian. The upper or north part of the town is the pleasantest part, and has three level, well-built, and spacious streets. The river, all the way up from Shields to Newcastle, is broad, the channel safe, and the tide flows with a strong current to the town, and far beyond it. In the beginning of the civil wars, in the 17th century, this town was taken and plundered by the Scots. The glass works have much business of the fine sort. It has also a considerable manufacture of broad and narrow cloths, and several soap-boileries; and is famous for grindstones, for which there is such a demand, that scarce a ship sails without them; whence the proverb, "That a Scotsman and a Newcastle grindstone travel all the world over." Ships for the coal trade are built to perfection, with great strength. Here is a considerable manufactory of hard-ware and wrought iron. Its markets are on Tuesday and Saturday; its fairs in August and October 29th, both of which last 9 days. London alone consumes at least 766,887 chaldrons of its coal every year; but the fish vended in that city by the name of *Newcastle salmon*, are taken 50 miles farther N. in the Tweed, and brought to Shields, where they are pickled, and sent to London. At the assizes here in 1743, two old men were subpœnaed as witnesses from a neighbouring village, viz. one 135, and his son 95, both hearty, and having their sight and hearing; and in 1744 one Adam Turnbull died in this town, aged 112, who had four wives, the last of whom he had married when he was near 100 years old. The annual customs at this port, stated by Mr Brand, in his *History of Newcastle*, at 41,000l. is now considerably above 70,000l. The coals carried out of it annually (on an average from 1785 to 1791) were nearly 448,000 Newcastle chaldrons; the weight 1,187,200 tons. The manufacture of earthen ware is greatly increased, and carried to perfection in 7 potteries; some of which employ upwards of 100 persons. Extensive manufactures of iron are also established, as well as a capital manufactory for white lead, milled lead, &c. The trade with the West India islands is also increased, Newcastle being most advantageously situated for the re-exportation of the West India produce to the ports on the Baltic, to Germany, Holland, France, &c. It is daily increasing in population and opulence, and is noted for hospitality. Great improvements have been made in it, by new streets. To the list of public edifices of modern erection, may be added a commodious riding-house, built by subscription. Newcastle lies 307 miles S. of Edinburgh. Lon. 1. 26. W. Lat. 55. 2. N.

NEWCESTON, a town of Ireland, in Cork.

NEWCOMB, Thomas, an ingenious divine, born in Herefordshire, and educated in Corpus Christi, College, Oxford. In 1734, he was appointed rector of Stopham in Sussex; and kept an academy at Hackney. He wrote many excellent poems, and turned Hervey's Meditations into blank verse.

NEWDIGATE, a village of Surry, 5 miles SE. of Darking. It has a medicinal spring, of the same nature with that of Epsom.

(1.) * NEWEL. *n. s.* 1. The compass round which the staircase is carried. "Set the stairs to the upper rooms be upon a fair open *newel*, and finely railed in." *Bacon*. 2. Novelty. *Spenser*.

(2.) NEWEL, in architecture, is the upright post which a pair of winding stairs turn about: this is properly a cylinder of stone, which bears on the ground, and is formed by the end of the steps of the winding stairs.

NEWELL, a town of Lithuania, in Brzesk.

NEWENBERG, a town of Germany, in Feldkirch, 3 miles NW. of Feldkirch.

NEWENDEN, a town of Kent, which has a bridge over the Rother, which divides that county from Sussex. It is 4 miles SE. of Cranbrook.

(1.) NEW ENGLAND, a late province of the British empire in America, bounded on the N. by Canada, E. by Nova Scotia and the Atlantic Ocean, S. by the Atlantic and Long Island Sound, and W. by New York. It lies in the form of a quarter of a circle. Its W. line, beginning at the mouth of Byram river, which runs into Long Island Sound at the SW. corner of Connecticut, lat. 41°, runs a little E. of N. until it strikes the 45th degree of lat. and then curves to the E. almost to the gulph of St Lawrence.

(2.) NEW ENGLAND, DISCOVERY AND SETTLEMENT

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MENT OF. This country was discovered in the beginning of the 17th century, and called *North Virginia*; but no Europeans settled there till 1608. The first colony which was weak and ill directed, did not succeed; and, for some time, there were only a few adventurers who came over at times in summer, built temporary huts for the sake of trading with the savages, and, like them, disappeared again for the rest of the year. At last some BROWNISTS, headed by Mr Robinson, (See INDEPENDENTS, § 4.) whom Neal styles the Father of the Independents, who in 1610 had been driven from England by persecution, fled to Holland, and settled at Leyden; but in 1621 determined, with Mr Brewster assistant preacher to Mr Robinson, to found a church for their sect in the new hemisphere. They therefore purchased in 1621, the charter of the English North Virginia company. Forty one families, making in all 120 persons, landed in the beginning of a very hard winter, and found a country entirely covered with wood, which offered a very melancholy prospect to men already exhausted with the fatigues of their voyage. Near one half perished either by cold, the scurvy, or other distress. The courage of the rest was beginning to fail, when it was revived by the arrival of 60 savage warriors, who came to them in the spring, headed by their chief. The old tenants assigned for ever to the new ones all the lands in the neighbourhood of the settlement they had formed under the name of *New Plymouth*; and one of the savages, who understood a little English, staid to teach them how to cultivate the maize, and instruct them in the manner of fishing upon their coast. This kindness enabled the colony to wait for the companions they expected from Europe with seeds, with domestic animals, and with every assistance they wanted. At first these succours arrived but slowly; but the persecution of the Puritans in England increased the number of proselytes to such a degree in America, that in 1630 they were obliged to form different settlements, of which Boston soon became the principal. These first settlers were not merely ecclesiastics, who had been deprived of their preferments on account of their opinions; nor those sectaries influenced by new opinions, that are so frequent among the common people. There were among them several persons of high rank, who, having embraced Puritanism, had taken the precaution to secure themselves an asylum in these distant regions. They had caused houses to be built, and lands to be cleared, with a view of retiring there, if their endeavours in the cause of civil and religious liberty should prove abortive at home.

(3.) NEW ENGLAND, DIVISION OF. The country was originally divided into four states, which at first had no connection with one another. The necessity of maintaining an armed force against the savages, obliged them to form a confederacy in 1643, when they took the name of the *United Colonies*. In consequence of this league, two deputies from each establishment used to meet in a stated place to deliberate upon the common affairs of New England, according to the instructions they had received from the assembly by which they were sent. This association laid no constraint upon the right of every individual to act entirely as he pleased, without either the permission or approbation of the mother country. All the submission required of these provinces was merely to acknowledge the kings of England for their sovereigns. Charles II. wished to make them more dependent. The province of Massachusetts, which, though the smallest, was the richest and the most populous of the four, being guilty of some misdemeanour against government, the king seized that opportunity of taking away its charter in 1684: and it remained without one till the revolution; when it received another, which, however, did not answer its claims or expectations. (See MASSACHUSETTS, § 2.) The crown reserved to itself the right of nominating the governor, and appointed to all military employments, and to all principal posts in the civil and juridical departments: it allowed the people of the colony their legislative power, and gave the governor a negative voice and the command of the troops, which secured him a sufficient influence to enable him to maintain the prerogative of the mother country in all its force. The provinces of Connecticut and Rhode-Island, by timely submission, prevented the punishment which that of Massachusetts had incurred, and retained their original charters. That of New-Hampshire had been always regulated by the same mode of administration as the province of Massachusetts bay. The same governor presided over the whole colony, but with regulations adapted to the constitution of each province. New England now consists of the States of NEW HAMPSHIRE, MASSACHUSETTS, MAINE, RHODE ISLAND, CONNECTICUT, and VERMONT. (See these articles.) These states are subdivided into counties, and the counties into townships.

(4.) NEW ENGLAND, FACE OF THE COUNTRY OF. New England is a high, hilly, and in some parts a mountainous country, formed to be inhabited by a hardy race of free, independent republicans. —The mountains are comparatively small, running nearly N. and S. in ridges parallel to each other. Between these ridges flow the great rivers in majestic meanders, receiving the innumerable rivulets and larger streams which proceed from the mountains on each side. To a spectator on the top of a neighbouring mountain, the vales between the ridges, while in a state of nature, exhibit a romantic appearance. They seem an ocean of woods, swelled and depressed in its surface like that of the great ocean itself. A richer though less romantic view is presented, when the valleys, by industrious husbandmen, have been cleared of their natural growth; and the fruit of their labours appears in loaded orchards, extensive meadows, covered with large herds of sheep and black cattle, and rich fields of flax, corn, and the various kinds of grain. These valleys, which have received the expressive name of INTERVAL *lands*, are of various breadths from 2 to 20 miles; and by the annual inundations of the rivers which flow through them, there is frequently an accumulation of rich, fat soil, left upon their surface when the waters retire.

(5.) NEW ENGLAND, FIRST SYSTEM OF LAWS IN, AND THEIR FATAL EFFECTS. The inhabi-

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tants of New England lived peaceably for a long time, without any regular form of policy. Their charter had indeed authorised them to establish any mode of government they might choose; but these enthusiasts were not agreed among themselves upon the plan of their republic, and government did not pay sufficient attention to them to urge them to secure their own tranquillity. At length they grew sensible of the necessity of a regular legislation; and this great work, which virtue and genius united have never attempted but with diffidence, was boldly undertaken by blind fanatics. It bore the stamp of the rude prejudices on which it had been formed. There was in this new code a singular mixture of good and evil of wisdom and folly. So much however did the latter preponderate that the instances of injustice, and sanguinary cruelty, of which they were guilty, in the punishment of witchcraft and other imaginary crimes, are too horrid and too numerous to be related in detail, but their consequence was, that in 1692 a war broke out, marked with as many atrocious acts of violence as occur in history. The prisons were filled, the gibbets left standing, and all the citizens involved in gloomy apprehensions. The most prudent quitted the country stained with the blood of its inhabitants: and nothing less than the total and immediate subversion of the colony was expected, when, on a sudden, all eyes were opened at once, and the excess of the evil awakened the minds which it had first stupified. Bitter and painful remorse was the immediate consequence; the mercy of God was implored by a general fast, and public prayers were offered up to ask forgiveness for the presumption of having supposed that heaven could have been pleased with sacrifices with which it could only have been offended. A perfect calm succeeded this agitation, and the Puritans of New England have never since been seized with so gloomy a fit of enthusiasm.

(6.) NEW ENGLAND, MANNERS AND CHARACTER OF THE CITIZENS OF. The New Englanders are generally tall, stout, and well built. They glory, and with justice, in possessing that spirit of freedom which induced their ancestors to leave their native country, and to brave the dangers of the ocean and the hardships of settling a wilderness. Their education, laws, and situation, serve to inspire them with high notions of liberty. Their jealousy is awakened at the first appearance of an invasion of their rights. A law, respecting the descent of estates which are generally held in fee simple, which for substance is the same in all the New England states, is the chief foundation and protection of this liberty. By this law, the possessions of the father are to be equally divided among all the children, excepting the eldest son, who has a double portion. In this way is preserved that happy mediocrity among the people, which, by inducing economy and industry, removes from them temptations to luxury, and forms them to habits of sobriety and temperance. At the same time, their industry and frugality exempt them from want, and from the necessity of submitting to any encroachment on their liberties. In New England, knowledge is more generally diffused among all ranks of people, than in almost any other part of the globe; arising from the excellent establishment of schools in every township. Another source of information is the newspapers, of which not less than 30,000 are printed every week in New England, and circulated in almost every town and village in the country. A person of mature age, who cannot both read and write, is rarely to be found. By means of this general establishment of schools, the extensive circulation of newspapers, and the consequent universality of information, every township throughout the country is furnished with men capable of conducting the affairs of their town with judgment and discretion. These men are the channels of political information to the lower class of people; if such a class may be said to exist in New England, where every man thinks himself at least as good as his neighbour, and believes that all mankind are, or ought to be, equal. The citizens from their childhood form habits of canvassing public affairs, and commence politicians. This naturally leads them to be very inquisitive. This desire after knowledge, in a greater or less degree, prevails throughout all classes of people in New England: and from their various modes of expressing it, some of which are blunt and familiar, bordering on impertinence, strangers have been induced to mention impertinent inquisitiveness as a distinguishing characteristic of the people.—Each man also has his independent system of politics; and each assumes a dictatorial office. Hence originates that restless, litigious, complaining spirit, which forms a dark shade in the character of New Englandmen. Before the American war, which introduced into New England a flood of corruptions, with many improvements, the Sabbath was observed with great strictness; no unnecessary travelling, no secular business, no visiting, no diversions were permitted on that sacred day. But since the war, a catholic tolerant spirit, occasioned by a more enlarged intercourse with mankind, has greatly increased, and is becoming universal. There is one distinguishing characteristic in this people, the custom of annually celebrating fasts and thanksgivings. The people of New England generally obtain their estates by hard and persevering labour: They of consequence know their value, and spend with frugality. Yet in no country do the indigent and unfortunate fare better. Their laws oblige every town to provide a competent maintenance for their poor; and the necessitous stranger is protected and relieved from their humane institutions. In no part of the world are the people happier, better furnished with the necessaries and conveniences of life, or more independent than the farmers in New England. As the great body of the people are hardy independent freeholders, their manners are congenial to their employments, plain, simple, and unpolished. Strangers are received and entertained among them with a great deal of artless sincerity and friendly unformal hospitality, and remark with pleasure, the honest and decent respect that is paid him by the children as he passes through the country. Many of the women in New England are handsome. They generally have fair, fresh, and healthful countenances, mingled with much female softness and delicacy. Those who have had the advantages

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vantages of a good education (and they are very numerous), are genteel, eaſy, and agreeable in their manners, and are ſprightly and ſenſible in converſation. They are early taught to manage domeſtic concerns with neatneſs and economy. Ladies of the firſt fortune make it a part of their daily buſineſs to ſuperintend the affairs of the family. Employment at the needle, in cookery, and at the ſpinning-wheel, with them is honourable. Idleneſs, even in thoſe of independent fortunes, is univerſally diſreputable. The women in the country manufacture the greateſt part of the clothing of their families. Their linen and woollen cloths are ſtrong and decent. Their butter and cheeſe is not inferior to any in the world. Dancing is the principal and favourite amuſement in New England. Gaming is practiſed by none but thoſe who cannot or will not find a reputable employment. The gameſter, the horſe-jockey, and the knave, are equally deſpiſed, and their company is avoided by all who would ſuſtain fair characters. The odious and inhuman practices of duelling, gouging, cock-fighting, and horſe-racing, are ſcarcely known. The athletic and healthy diverſions of cricket, football, quoits, wreſtling, jumping, foot races, &c. are univerſally practiſed in the country, and ſome of them in the moſt populous places, and by people of almoſt all ranks. Squirrel-hunting is a noted diverſion in country places, where this kind of game is plenty. Some divert themſelves with fox-hunting, and others with the more profitable ſports of fiſhing and duck-hunting; and in the frontier ſettlements where deer and fur game abound, the inhabitants make a lucrative ſport of hunting them. In winter, while the ground is covered with ſnow, which is commonly two or three months, ſleighing is the general diverſion. A great part of the families throughout the country are furniſhed with horſes and ſleighs.

(7.) NEW ENGLAND, METHOD OF SETTLING LANDS IN. The clearing of the lands in theſe ſtates is not directed by chance as in others. This matter from the firſt was ſubjected to laws which are ſtill religiouſly obſerved. No citizen whatever has the liberty of ſettling even upon unoccupied land. The government, deſirous of preſerving all its members from the inroads of the ſavages, and of placing them in a condition to ſhare in the protection of a well-regulated ſociety, ordered that whole villages ſhould be formed at once. As ſoon as 60 families offer to build a church, maintain a clergymen, and pay a ſchoolmaſter, the general aſſembly allot them a ſituation, and permit them to have two repreſentatives in the legiſlative body of the ſtate. The diſtrict aſſigned them always borders upon the lands already cleared, and generally contains 69,000 ſquare acres. Theſe new people chooſe the ſituation moſt convenient for their habitation, which is uſually of a ſquare figure. The church is placed in the centre; the coloniſts divide the land among themſelves, and each incloſes his property with a hedge. Some woods are reſerved for a common; and thus New England is conſtantly enlarging its territory.

(8.) NEW ENGLAND, MOUNTAINS, RIVERS, &c. or. There are four principal ranges of mountains, paſſing nearly from NE. to SW. through New England. Theſe conſiſt of a multitude of parallel ridges, each having many *ſpurs*, deviating from the courſe of the general range; which ſpurs are again broken into irregular hilly land. The main ridges terminate, ſometimes in high bluff heads, near the ſea-coaſt, and ſometimes by a gradual deſcent in the interior part of the country. One of the main ranges runs between Connecticut and Hudſon's rivers. This range branches and bounds the vales through which flows the Houſatonick river. The moſt eaſtern ridge of this range terminates in a bluff head at Meriden; a ſecond ends in like manner at Willingford, and a third at New Haven. In Lyme, on the E. ſide of the Connecticut, another range commences, forming the E. boundary of Connecticut vale. This range trends northerly, at the diſtance, generally, of about 10 or 12 miles E. from the river, and paſſes through Maſſachuſetts, where the range takes the name of *Chickabee Mountain*; thence croſſing into New Hampſhire, at the diſtance of about 20 miles from the Maſſachuſetts line, it runs up into a very high peak, called *Monadnick*, which terminates this ridge of the range. (See MONADNICK.) A weſtern ridge continues, and in about lat. 43° 20′ runs up into the Sunipee mountains. About 50 miles further, in the ſame ridge, is Mooſcoog mountain. A third range begins near Stonington in Connecticut. It takes its courſe NE. and is ſometimes broken and diſcontinued; it then riſes again, and ranges in the ſame direction into New Hampſhire, where, in lat. 43° 25′, it runs up into a high peak called *Cowſawaſſog*. The fourth range has a humble beginning about Hopkinton in Maſſachuſetts. The eaſtern ridge of this range runs N. by Watertown and Concord, and croſſes the Merrimack at Pantucket Falls. In New Hampſhire, it riſes into ſeveral high peaks, of which the White mountains are the principal. From theſe White mountains a range continues NE. croſſing the E. boundary of New Hampſhire, in lat. 44° 30′, and forms the height of land between the Kennebeck and Chaudiere. Theſe ranges of mountains are full of lakes, ponds, and ſprings, that give riſe to numberleſs ſtreams of various ſizes, which, interlocking each other in every direction, and falling over the rocks in romantic caſcades, flow meandering into the river below. No country on the globe is better watered. The chief river is the Connecticut. See CONNECTICUT, N° I.

(9.) NEW ENGLAND, POPULATION OF. New England is the moſt populous part of the United States. It contains at leaſt 823,000 ſouls. One fifth of theſe are fencible men. New England then, ſhould any great and ſudden emergency require it, could furniſh an army of 164,600 men. The great body of theſe are land-holders and cultivators of the ſoil. The former attaches them to their country; the latter, by making them ſtrong and healthy, enables them to defend it. The boys are early taught the uſe of arms, and make the beſt of ſoldiers. Few countries on earth, of equal extent and population, can furniſh a more formidable army than this part of the union. New England may, with propriety, be called a nurſery of men, whence are annually tranſplanted,

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into other parts of the United States, thousands of its natives. The State of Vermont, which is but of yesterday, and contains about 100,000 souls, has received more inhabitants from Connecticut than from any other state; and yet between 1774 and 1782, notwithstanding her numerous emigrations to Vermont, Susquehannah, and other places, and the depopulation occasioned by a seven years bloody war, it was found, from an actual census of the inhabitants in the years before-mentioned, that they have increased from 197,856, their number in 1774, to 290,150, their number in 1782. Vast numbers of the New Englanders, since the war, have emigrated into the northern parts of New York, into Kentucky and the Western Territory, and into Georgia; and some are scattered into every State, and every town of note in the union.

(10.) NEW ENGLAND, SOIL AND PRODUCE OF. The soil is very various. On the sea-coast the land is low, and in many parts level and sandy. In the valleys, between the ranges of mountains, the land is generally broken, and in many places rocky, but of a strong rich soil, capable of being cultivated to good advantage, which also is the case with many spots even on the tops of the mountains. Each tract of different soil is distinguished by its peculiar vegetation, and is pronounced good, middling, or bad, from the species of trees which it produces; and from one species generally predominating in each soil, has originated the descriptive names of oak land, birch, beech, and chesnut lands, pine, barren, maple, ash, and cedar swamps, as each species happens to predominate. Intermingled with those predominating species are walnut, firs, elm, hemlock, magnolia, moose wood, sassafras, &c. &c. The best lands produce walnut and chesnut; the next, beech and oak; lands of the third quality produce fir and pitch pine; the next, whortleberry and barberry bushes; and the poorest produce nothing but marshy imperfect shrubs. Among the flowering trees and shrubs in the forests, are the red-flowering maple, the sassafras, the locust tree, the tulip-tree, honeysuckle, wild rose, dogwood, elm, leather tree, laurel, hawthorn, &c. which in the spring of the year give the woods a most beautiful appearance, and fill them with a delicious fragrance. Among the fruits which grow wild, are the several kinds of grapes; which are small, sour, and thick skinned. The vines on which they grow are very luxuriant, often overspreading the highest trees in the forests; and, without doubt, might be greatly meliorated by proper cultivation. Besides these, are the wild cherries, white and red mulberries, cranberries, walnuts, nuts, chesnuts, butter nuts, beech nuts, wild plums and pears, whortle-berries, bilberries, gooseberries, strawberries, &c. The soil in the interior country is calculated for the culture of Indian corn, rye, oats, barley, flax, hemp, buckwheat, beans, peas, &c. In many of the inland parts, wheat is raised in large quantities; but on the sea-coast it has never been cultivated with success, being subject to blasts. The fruits which the country yields from culture are, apples in the greatest plenty; of these cyder is made, which constitutes the principal drink of the inhabitants; also, pears of various sorts, quinces, peaches, (from which is made peach brandy,) plums, cherries, apricots, culinary plants, &c. New England is a fine grazing country; the valleys between the hills are generally intersected with brooks of water, the banks of which are lined with a tract of rich meadow or intervale land. The high and rocky ground is, in many parts, covered with honeysuckle, and generally affords the finest of pasture. New England therefore boasts of raising some of the finest cattle in the world; nor will she be envied, when the labour of raising them is taken into view. Two months of the hottest season in the year, the farmers are employed in procuring food for their cattle; and the cold winter is spent in dealing it out to them. The pleasure and profit of doing this, is however a satisfying compensation to the honest and industrious farmer.

(11.) NEW ENGLAND, STATE OF LITERATURE IN. The inhabitants of New England are generally fond of the arts, and have cultivated them with great success. Their colleges have flourished beyond any others in the United States. The illustrious characters they have produced, who have distinguished themselves in politics, law, divinity, the mathematics and philosophy, natural and civil history, and in the fine arts, particularly in poetry, evince the truth of these observations.

(12.) NEW ENGLAND, TRADE OF. New England has no one staple commodity. The ocean and the forests afford the two principal articles of export. Codfish, mackarel, shad, salmon, and other fish—whale oil and whale bone—masts, boards, scantling, staves, hoops, and shingles, have been and are still exported in large quantities. The annual amount of cod and other fish for foreign exportation, including the profits arising from the whale-fishery, is estimated at upwards of half a million.—Besides the above articles they export from the various parts of New England ships built for sale, horses, mules, live stock—pickled beef and pork, potash, pearl-ash, flax, seed, butter, and cheese, rum, &c. The balance of trade, as far as imperfect calculations enable us to judge, has generally been against New England; not from any unavoidable necessity, but from her large importations. From a view of the annual imports into New England, it appears that the greatest part of them consists of the luxuries, or at best the conveniences of life, that may be dispensed with; the country affords the necessaries in great abundance.

NEW-ENGLANDERS, the natives of New England. See NEW ENGLAND, § 6, 9, and 11.

(1—5.) NEWENHAM, five English villages; 1. E. of Bedford: 2. in Devonshire, near Axminster: 3. in ditto, near Plymton: 4. in Hertfordshire N. of Baldock: 5. in Kent.

(6.) NEWENHAM, CAPE, a rocky promontory of considerable height, on the W. coast of North America, in the North Pacific Ocean; discovered by Capt. Cook, in 1778. (See COOK, N° III, § 10.) It forms the N. extremity of an extensive bay called *Bristol Bay*, of which the promontory of Alaska is the S. boundary. Lon. 162. 24. W. Lat. 58 42. N.

NEWENT, a town of Gloucestershire, in the fore-

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foreſt of Dean, on a river which runs into the Severn. It has a canal to Hereford, a rich coal mine, and a market on Friday. It lies 8 miles NW. of Gloucester, and 114 WNW. of London. Lon. 2. 20. W. Lat. 51. 56. N.

NEWENTON, 1. a town of Kent, near Sittingbourn: 2. a town of Wilts, 2 miles N. of Malmſbury: 3. a village in ditto, NW. of Everley.

NEWFANE, a town of Vermont, capital of Windham county, with a church and court houſe; 30 miles E of Bennington.

* NEWFANGLED. *adj.* [*new* and *fangle.*] Formed with vain or fooliſh love of novelty.—

At Chriſtmas I no more deſire a roſe,
Than wiſh a ſnow in May's *newfangled* ſhows.
Shak.

—Thoſe charities are not *newfangled* devices of yeſterday, but are moſt of them as old as the reformation. *Atterbury.*

* NEWFANGLEDNESS. } *n. ſ.* [from *new-*
* NEWFANGLENESS. } *fangled.*] Vain and fooliſh novelty.—So to *newfangleneſs* both of manner, apparel, and each thing elſe. *Sidney.*—Yet he them in *newfangledneſs* did paſs. *Hubberd.*—The women would be loth to come behind the faſhion in *newfangledneſs* of the manner, if not in coſtlineſs of the matter. *Carew.*

NEWFIDLER ZEE, a lake of Hungary, 17 m. long and 6 broad; 20 miles S. by W. of Preſburg.

NEW FOREST, an extenſive foreſt of Hampſhire, at leaſt 40 miles in compaſs, which had many populous towns and villages, and 36 churches, till it was deſtroyed and turned into a foreſt by William the Conqueror. It is remarkable, that WILLIAM II. the ſon of this tyrant, was killed in this foreſt at a hunting match. (See ENGLAND, § 20.) There are nine walks in it, and to every one a keeper, under a lord warden, beſides two rangers, and a bow-bearer. As this large tract lay many ages open and expoſed to invaſions from foreigners, Henry VIII. built ſome caſtles in it; and it has now ſeveral pretty towns and villages. It is ſituated in that part of Hampſhire which is bounded on the E. by the Southamptop, and on the S. by the Britiſh Channel. It is advantageouſly ſituated with reſpect to water carriage and nearneſs to the dock-yards, beyond every other foreſt, having ſeveral ports and places of ſhelter near it, for ſhipping timber, particularly Lymington only 2 miles diſtant, Bewley about half a mile, and Redbridge 3 or 4 miles; and the navigation to Portſmouth, the moſt conſiderable dock-yard in England, is only 30 miles from the neareſt of theſe places. This is the only foreſt belonging to the crown of which the origin is known. Domeſday book contains the moſt diſtinct account of its afforeſtation by William I. the contents of every field, farm, or eſtate afforeſted, in hides, carucates, or virgates, by which the extent of land was then computed; together with the names of the hundreds and villages, and of the former proprietors, who were for the moſt part Saxons, the rent or yearly value of each poſſeſſion, and the tax which had been paid for it to the crown during the reign of Edward the Confeſſor, before the inhabitants were expelled, and that part of the country laid waſte, are all to be found in that moſt curious and venerable record. The names of many of the places having been changed ſince that time, it is difficult to aſcertain with preciſion what were then the limits of the foreſt. The oldeſt perambulation is among *the Pleas of the Foreſt*, in the 8th year of Edward I. preſerved in the Chapter-houſe at Weſtminſter. The boundaries there deſcribed include all the country from the Southampton on the E. to the Avon on the W. following the ſea-coaſt as far as the S. boundary between thoſe rivers, and extending N. as far as North Chadeford, on the W. and to Wade and Orebrugg, or Owerbridge, on the E.; and the greateſt part, if not the whole, of that extenſive diſtrict, is mentioned in Domeſday-book to be the foreſt belonging to the crown. Another perambulation was however made in the 29th of the ſame king, which leaves out a great part of the country contained within the former. This perambulation, which is preſerved in the Tower of London, confines the foreſt to limits which appear to have been followed in the 22d of Charles II. when the foreſt was again perambulated. By the *Charta de Foreſta*, all lands not belonging to the crown, which had been afforeſted by Henry II. Richard I. or King John, were to be diſafforeſted; but as no proviſion was made for the reduction of the more ancient afforeſtations, it is eaſy to account for the great diminution of this foreſt in the reign of Edward I. who was not likely to ſubmit to any encroachment on his rights. The perambulation of Charles II. in 1683, is the laſt on record: it contains the preſent legal bounds of the foreſt, and was given to the ſurveyors as their guide, in taking the plan which they made. From that plan, with the approbation of the lords commiſſioners of his majeſty's treaſury, an engraving was made. According to it, the foreſt extends from Goodſhill on the NW. to the ſea on the SE. about 20 miles; and from Hardley on the E. to Ringwood on the W. about 15 miles; and contains within thoſe limits about 92,365 acres ſtatute meaſure. The whole, however, is not foreſt land, or now the property of the crown: there are ſeveral manors, and other conſiderable freehold eſtates, within the perambulation, belonging to individuals, to the amount of about 24,797 acres; about 625 acres are copyhold or cuſtomary lands belonging to his majeſty's manor of Lyndhurſt; about 1004 acres are leaſehold under the crown, granted for certain terms of years, and forming part of the demiſed land revenue, under the management of the ſurveyor-general of crown lands; about 901 acres are purpreſtures or encroachments on the foreſt; about 1193 acres are incloſed lands, held by the maſter-keepers and groom-keepers, with their reſpective lodges; and the remainder, being about 63,845 acres, are woods and waſte lands of the foreſt. To perpetuate the ſpot where William Rufus was killed, a triangular ſtone was erected in 1745. K. George III. viſited this ſpot in 1789. In Auguſt 1782, a curious ancient golden croſs was found here by a labouring man digging turf. It weighed above an ounce of gold, and had on one ſide an engraving of our Saviour, and on the other, the ladder, ſpear, nails, and other emblems of his ſufferings.

NEW-FORGE, a town of Ireland, in Down.

NEWFOUNDLAND, a large iſland of North America,

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America, belonging to Great Britain, lying between 46° 50′ and 51° 30′ Lat. N. and between 53° 30′ and 58° 20′ Lon. W. of London. The form is that of an irregular triangle, the base or S. side being 80 leagues in extent; the E. side is the longest; and the whole circumference about 150 leagues. It is bounded on the N. by the Straits of Belleisle, which separate it from Labrador; on the E. and S. the Atlantic Ocean, and on the W. the Gulph of St Lawrence. The climate is rather severe; and the soil, at least on the sea-coast, which is all that we know of it, is poor and barren. A few kitchen vegetables, with strawberries and raspberries, are all its produce. The country within land is mountainous, and abounds with timber: there are several rivers, which are plentifully stored with various sorts of fish; many deep bays, and good ports. St John's and Placentia are the two principal settlements, and at each of these there is a fort: the number of people who remain here in winter is computed at 4000. The French, by the treaty of Utrecht, were permitted to fish from Cape Bonavista on the E. side, round the N. of the island, to Point Rich on the W.; and by the treaty of Paris, they were allowed the isles of St Pierre and Miquelon, to dry their fish, but not to erect fortifications. The great importance of this place arises from its fishery, which is partly carried on by the inhabitants at the several harbours, which are about 20 in number, who take vast quantities of cod near the coast, which they bring in and cure at their leisure, to have it ready for the ships when they arrive. But the great and extensive fishery is on the banks at some distance from the island. The great bank lies 20 leagues from the nearest point of land, from the latitude 41° to 49°, stretching 300 miles in length and 75 in breadth. (See BANK, § 4.) East of this lies the False Bank; the next is styled *Vert* or *the Green Bank*, about 240 miles long, and 120 over; then *Banquero*, about the same size; the shoals of Sand Island, Whale Bank, and the Bank of St Peter's, with several others of less note, all abounding with fish. The cod are caught only by a hook and line; (see GADUS, § 9;) yet an expert fisher will take from 250 to 400 in a day; for the fish never bite in the night, and the labour is very great. The usual season is from May to October, in the height of which there are from 500 to 700 sail upon the banks at a time. But the best season is reckoned from Feb. to June; those taken in July, Aug. and Sept. being apt to spoil soon. They are cured in very different ways. Some are styled *white fish*, others *mud fish*, which are stowed and salted in the hold, and will not keep long; but the best and most valuable are the dried cod. The quantity taken is prodigious; yet in some seasons and in different places varies considerably, as the fish frequently change their stations. The *fishing ships* lie upon the banks, take and cure their own fish, and when they are full sail for a market. They are from 100 to 150 tons burden, and will catch between 30,000 and 40,000 cod each. The most essential part of the fishery is to have a master who knows how to cut up the cod, one who is skilled to take off the head properly, and above all, a good salter, on which the preserving of them, and consequently the success of the voyage, depends. As soon as the cod are caught, the head is taken off; they are opened, gutted, and salted; and the salter stows them in the bottom of the hold, head to tail, in beds a fathom or two square; laying layers of salt and fish alternately, but never mixing fish caught on different days. When they have lain thus three or four days, to drain off the water, they are placed in another part of the ship, and salted again; where they remain till the vessel is loaded. Sometimes they are cut in thick pieces, and put in barrels for the conveniency of carriage. The dry cod, though of the same kind with the fresh cod, are much smaller, and therefore fitter to keep, as the salt penetrates more easily into them. The fishery of both is much alike; (see FISHERY, § 8;) only this latter is most expensive, as it takes up more time, and employs more hands; and yet scarce half so much salt is spent in this as in the other. When several vessels meet and intend to fish in the same port, he whose shallop first touches ground becomes entitled to the quality and privileges of admiral: he has the choice of his station, and of all the wood on the coast at his arrival. As fast as the masters arrive, they unrig their vessels, leaving nothing but the shrouds to sustain the masts; and in the mean time the mates provide a tent on shore, covered with branches of trees, and sails over them, with a scaffold of great trunks of pines, 12, 15, 16, and often 20 feet high, commonly from 40 to 60 feet long, and about one third as much in breadth. While the scaffold is preparing, the crew are a-fishing; and as fast as they catch, they bring their fish ashore, and open and salt them upon moveable benches; but the main salting is performed on the scaffold. When the fish have taken salt, they wash and hang them to drain on rails; when drained, they are laid on small pieces of wood laid across, and covered with branches of trees, having the leaves stripped off for the passage of the air. On these stages they are disposed a fish thick, head against tail, with the back uppermost, and are turned carefully. The sack ships go directly to the island, where they purchase fish from the inhabitants either by barter or bills of exchange. The principal markets for cod are Spain, Portugal, Italy, and the West Indies. The value of this fishery is computed at some hundred thousand pounds annually; employing, besides several hundred ships, some thousands of seamen, and affording a maintenance to a number of tradesmen of different occupations, by which many large towns in the W. of England accumulate much wealth, and at the same time contribute to the benefit of the public. The great utility of this fishery was very early seen, and very vigorously pursued; for in the beginning of the reign of king James I. 250 sail were employed therein. Three quintals of wet fish make one quintal of dried cod. The livers of every 100 quintals make a hogshead of oil; and there are many lesser advantages that diminish the expense. The fishery produces differently in different seasons; but it is reckoned a very good one when it produces 300,000 quintals of fish and 3000 barrels of oil. As every ship carries 12, and each boat 8 men, and as these return home in six months, there cannot be a better nursery for seamen.

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men. The artificers and traders employed in building, victualling, and repairing these veſſels, are very numerous in the reſpective ports from which they ſail. Theſe circumſtances juſtify the particular attention paid by government to this branch of the public ſervice; of which an annual and very diſtinct account is delivered by the proper officer to the governor of Newfoundland, *i. e.* the commodore of his majeſty's ſquadron. Mr Pennant, in the appendix to his Arctic Zoology, gives the following account of this iſland. "Within the circuit of 60 miles of the ſouthern part, the country is hilly, but not mountainous. The hills increaſe in height as they recede from the ſea; their courſe is irregular, not forming a chain of *hills*, but riſe and fall abruptly. The coaſts are high, and the ſhores moſt remarkably bold. The ſame may be ſaid of almoſt every part of this vaſt iſland. The country is much wooded, and the hills are clothed with birch, hazel, ſpruce, fir, and pine, all ſmall; which is chiefly owing to the inhabitants taking off the bark to cover the fiſh ſtages. This peninſula is ſo indented by the fine and deep bays of Placentia, St Mary, Conception, and Trinity, that it may be eaſily penetrated in all parts, which is done for the ſake of fowling, or procuring ſpars for maſts, oars, &c. The iſthmuſes are moſt remarkably narrow. The mountains on the SW. ſide, near the ſea, are very high, and terminate in lofty headlands. Such are *Chapeau Rouge*, a moſt remarkably high promontory, Cape St Mary's, and Cape le Hune: on the NE. moſt of the hills terminate pyramidally, but form no chain. The interior parts of the country conſiſt chiefly of moraſſes, or dry barren hammocks, or level land, with frequent lakes or ponds, and in ſome places covered with ſtunted black ſpruce. The rivers of Newfoundland are unfit for navigation, but they are of uſe in floating down the wood with the ſummer floods; and are excellent guides for the hunters of beavers and other animals, to penetrate up the country, which as yet has never been done deeper than 30 miles. Near the brooks timber is commonly met with, but ſeldom above 3 or 4 miles inland, and in valleys; the hills in the N. diſtrict being naked and barren. In ſome parts of Newfoundland there is timber ſufficiently large for building merchant ſhips; the hulk is made of juniper, and the pine furniſhes maſts and yards; but as yet none has been found large enough for a maſt for a large cutter. The fiſhery is divided into two ſeaſons; that on the ſhore, or the ſhore ſeaſon, commences about the 20th of April, and ends about the 10th of October; the boats fiſh in from 4 to 20 fathoms water. The moſt important, the bank-fiſhing ſeaſon, begins the 10th of May, and continues till the 30th of Sept. and carried on in 30 to 45 fathoms depth of water. Banking veſſels have ſailed from St John's to the bank as early as the 12th of April. At firſt they uſe pork or birds for a bait; but as they catch fiſh, they ſupply themſelves with ſhell-fiſh called clams, which are found in the belly of the cod. The next bait is the lobſter; after that the herring and the launce, which laſt till June, when the capelan comes on the coaſt, and is another bait. In Auguſt the ſquid comes into uſe, and finally the herring again. The greateſt number of cod-fiſh taken by a ſingle fiſherman in the ſeaſon has been 12,000, but the average is 7000. The largeſt fiſh which has been taken was 4 feet 3 inches long, and weighed 46 lb. A banking veſſel of 10,000 fiſh ought to be filled in three weeks, and ſo in proportion; and 80 quintals (112 lb. each) for a boat in the ſame time. In 1785, 341 Engliſh veſſels fiſhed on the bank, a number exceeding that of the French. A heap of dried fiſh, 20 feet long and 10 wide, and 4 deep, contains 300 quintals. Such an heap ſettles, in the courſe of 48 hours after it is made, about one 12th. An extraordinary ſplitter will ſplit five quintals of fiſh in an hour. The average in that time is two. There is no fiſhing during winter, on account of the inclemency of the ſeaſon. It is ſuppoſed that the fiſh in a great meaſure quit the banks before that time, as in general they are very ſcarce when the fiſhing veſſels go upon the banks early in ſpring. There are a few ſmall towns on the coaſts, which have gardens ſown with Engliſh pulſe; but many of the inhabitants quit the country in winter. An admiral or ſome ſea officer is governor of Newfoundland. He ſails from England in May, and returns by the 30th of November."

NEW GALLOWAY. See GALLOWAY, N° VI.

NEW HANOVER. See HANOVER, N° 10, 11, 12.

NEW HAMPSHIRE. See HAMPSHIRE, N° 4.

(1.) NEW-HAVEN, a county of Connecticut, extending along the Sound, from Middleſex county on the E. to Fairfield county W.; about 30 miles long from N. to S. and 28 broad from E. to W. It is divided into 14 townſhips, which, in 1790, contained 30,397 citizens, and 433 ſlaves. The lands are hilly, but well watered and well cultivated. In a hill a few miles W. by N. of the city, is a cave, famous for having been the refidence of John Dixwell, one of the regicide judges, who ſat on the trial of K. Charles I.

(2.) NEW-HAVEN, the capital of the above county, and the largeſt city in the State; and alternately with Hartford one of its capitals. It is pleaſantly ſeated on a large plain, at the head of the harbour, partly ſurrounded by hills, 4 miles N. of Long Iſland. It has 4 principal ſtreets lying NW. and SE. croſſed by others at right angles. Near the centre is a large ſquare, ſurrounded by public buildings, ſuch as the ſtate-houſe, 2 colleges, 4 churches, a chapel, &c. and ornamented with rows of trees. The population, in 1794, was about 4000; the number of houſes 400. It has a good trade with New York and the W. India iſlands. The exports for 1794 amounted to 171,808 dollars. Manufactures of linen, cotton, paper, buttons, &c. are carried on. In Yale College is a library of above 3000 volumes, a philoſophical apparatus, &c. It lies 40 miles S. by W. of Hartford, 88 from New York, and 183 NE. of Philadelphia. Lon. 72. 56. W. Lat. 41. 18. N.

(3.) NEW-HAVEN, a townſhip of Vermont, in Addiſon county, on the Otter, containing 723 citizens in 1795.

(4.) NEW-HAVEN, a town of Suſſex, at the mouth of the Ouſe, with a quay on the E. ſide; 7 miles S. of Lewes, and 56 S. of London. Lon. 0. 5. E. Lat. 50. 48. N.

(5.) NEW-

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(5.) NEW-HAVEN, a town of Kent, in Thanet.

(6.) NEWHAVEN, a conſiderable fiſhing village of Scotland, in Mid-Lothian, 2 miles N. of Edinburgh, and 1 W. of Leith; much reſorted to for ſea bathing, for which it has elegant accommodations. The population in 1793 was about 600.

NEW HEBRIDES. See HEBRIDES, N° 2.

NEW HEMPSTEAD, a townſhip of New York, in Orange county, containing 245 electors in 1796.

NEWHILLS, a pariſh of Scotland in Aberdeenſhire, of an irregular hexagonal form, 5½ miles in diameter, bounded by the Don, on the NE. The ſurface is hilly: The ſoil in the NE. a deep rich mould, producing rich crops of oats, barley, turnips, &c. but in the reſt, light ſhallow and ſpongy. The air is ſharp; the roads are good. The population in 1792 was 1153; increaſe 194, ſince 1755; the number of horſes was 230; of ſheep 600, and black cattle 900. Three fairs for cattle and hard wares are held at Greenburn. There are 4 quarries of granite, and ſeveral nurſeries of trees at Auchmull. See AUCHMULL.

NEW HOLDERNESS, a townſhip of New Hampſhire, in Grafton county, on the Pemigewaſſet, 3 miles E. by S. of Plymouth.

NEW HOLLAND. See HOLLAND, N° VI, VII; 1—10.

NEW HUNTINGTON, a mountainous townſhip of Vermont in Chittendon county.

NEW JERSEY. See JERSEY, N° 4.

NEWIN. See NEVIN.

* NEWING. *n. ſ.* [from *new.*] Yeſt or barm.

(1.) NEWINGTON, a town of Kent, near Hithe and Folkſton.

(2.) NEWINGTON, a town of Georgia, 5 miles NW. of Savannah.

NEW IPSWICH, a townſhip of New Hampſhire, in Hillſborough county, on the Souhegan, with an academy; containing 1241 citizens in 1795. It lies 74 miles WSW. of Portſmouth.

NEW IRELAND. See BRITAIN, N° IV; and IRELAND, N° III. and IV.

NEW KENT, a county of Virginia, 33 miles long and 12 broad, containing 2539 citizens, and 3700 ſlaves in 1795.

(1.) NEWLAND, an iſland of England, near the NW. coaſt of Cornwall, at the mouth of the Alan, 4 miles below Padſtow.

(2—12.) NEWLAND, 11 Engliſh villages; viz. 2. in Dorſetſh. one each in Cumberland, Glouceſter, Kent, Warwick, and Worceſter; and of 4 in Yorkſhire.

NEWLANDS, a pariſh of Scotland, in Tweeddale or Peebles-ſhire, on the borders of Mid-Lothian. The ſurface is varied with hills and valleys, but the former are green to the top. The ſoil is partly clay, partly loam. Mineral ſprings abound, and trees thrive every where. Lime, coals, ochre and manganeſe, are alſo found. An ochre manufactory is eſtabliſhed. About 1300 Scots acres are in cultivation; but improvements are retarded by heavy thirlages. The population, in 1790, was 891; decreaſe 118 ſince 1755: the number of horſes was 230; cows 700, and ſheep 3000. DROCHIL CASTLE is in this pariſh. See that article. The chief gentlemens ſeats are, the *Wheam*, *La Mancha*, and *Magbichill*.

(1.) NEW LONDON, a town of Virginia, capital of Bedford county, 133 miles W. by S. of Richmond.

(2, 3.) NEW LONDON. See LONDON, N° V. and VI.

NEW LUCE. See LUCE, N° 5.

* NEWLY. *adv.* [from *new.*] 1. Freſhly; lately.—

Her breath indeed thoſe hands have *newly* ſtopp'd: *Shak.*

—They *newly* learned by the king's example, that attainders do not interrupt the conveying of title to the crown. *Bacon.*—

Her lips were red, and one was thin,
Compar'd to that was next her chin;
Some bee had ſtung it *newly*. *Suckling.*

He rubb'd it o'er with *newly* gather'd mint. *Dryden.*

2. In a manner different from the former.—

Such is the power of that ſweet paſſion,
That it all ſordid baſeneſs doth repel,
And the refined mind doth *newly* faſhion
Into a fairer form. *Spenſer.*

3. In a manner not exiſting before.

NEW MACHAR. See MACHAR.

NEWMANSTOWN, a town of Pennſylvania, in Dauphine county; 72 miles NW. by W. of Pennſylvania.

NEWMARK. See NEUMARK, N° 1, and 2.

(1.) NEWMARKET, a town of England, in Cambridgeſhire, 14 miles E. of Cambridge, 13 from St Edmondſbury, and 60 NE. of London; with one long ſtreet, the N. ſide in Suffolk, the S. ſide in Cambridge-ſhire. It is a healthy place, and a great thorough-fare in the road from London to Norfolk; but ſtands moſtly by the horſe-races every year in April and October, here being the fineſt courſe in England; on which there is a houſe for the king when he comes to the races, which was built by Charles II. The king gives a plate or two every year, beſides thoſe given by the nobility; and wagers are laid upon the horſes, which are ſeldom under 500l. and often above 1000l. It has two coffeehouſes, at which, every night and morning during the races, there is gaming, as there is alſo at the houſes of the nobility and gentry. Here are alſo cock-matches. It has a chapel of eaſe to the mother-church at Ditton; and another in the Suffolk ſide, which is parochial. The town was burnt in 1683, but ſoon rebuilt. It has 2 charity ſchools, one for 20 boys, another for 20 girls, ſupported by 50l. a-year, firſt ſettled by Queen Anne. It has markets on Tueſday. Lon. 0. 25. E. Lat. 52. 20. N.

(2.) NEWMARKET, a town of N. Wales in Flintſhire.

(3.) NEWMARKET, a town of Virginia, in Amherſt county, 100 miles above Richmond, and 378 from Philadelphia.

NEW MILFORD, a town of Connecticut, in Litchfield county; 181 miles from Philadelphia.

NEW MILL, a village of Banff-ſhire, in the pariſh of Keith, containing 65 inhabitants in 1791.

NEWMILNS, an ancient burgh of barony in Ayrſhire, in the pariſh of Loudoun, erected by K. James IV. under the ſuperiority of the earls of Loudoun. It contained about 1000 inhabitants in 1791.

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1791. It has fairs on the 3d Tuesday of May, 2d Wed. of July, 22d Aug. 18th Oct. and 29th Nov. O. S.

(1.) * NEWNESS. *n. ſ.* [from *new.*] 1. Freſhneſs; lateneſs; recentneſs; ſtate of being lately produced.—Their ſtories, if they had been preſerved, and what elſe was performed in that *newneſs* of the world, there could nothing of more delight have been left to poſterity. *Raleigh.*—

In theſe diſturbances,
And *newneſs* of a wav'ring government,
T' avenge them of their former grievances. *Dan.*

—When Horace writ his ſatyrs, the monarchy of his Cæſar was in its *newneſs*, and the government but juſt made eaſy to his conquered people. *Dryd. Juv.* 2. Novelty; unacquaintance.—Words borrowed of antiquity do lend majeſty to ſtile. they have the authority of years, and out of their intermiſſion do win to themſelves a kind of grace like *newneſs*. *Ben Jonſon.*—*Newneſs*, in great matters, was a worthy entertainment for a mind, *South.* 3. Something lately produced.—There are ſome *newneſſes* of Engliſh, tranſlated from the beauties of modern tongues, as well as from the elegancies of the Latin. *Dryd. Don Sebaſt.* 4. Innovation; late change.—

Away, my friends, new flight;
And happy *newneſs* that intends old right. *Shak.*

5. Want of practiſe.—His device was to come without any device, all in white like a new knight, but ſo new as his *newneſs* ſhamed moſt of the others long exerciſe. *Sidney.*

(2.) NEWNESS. See NOVELTY.

(1.) NEWNHAM. See NEWENHAM, N° 6.

(2.) NEWNHAM, a town of Glouceſterſh. on the Severn, with a market on Friday; 8 miles SW. of Glouceſter, and 112 NW. of London. Lon. 2. 23. W. Lat. 51. 46. N.

NEW PALTZ, a town of New York in Ulſter county, with a Dutch church; 80 miles NW. of New York.

(1.) NEWPORT, a borough of England, in Cornwall, N. of LAUNCESTON, with which it was formerly joined, and 214 miles W. by S. of London. It ſends 2 members to Parliament. Lon. 4. 36. W. Lat. 50. 43. N.

(2.) NEWPORT, a large borough of Hampſh. in the Iſle of Wight, governed by a mayor and burgeſſes; who ſend two members to Parliament. It has markets on Wed. and Sat. In 1648, a treaty was entered into at this town between K. Charles I. and the commiſſioners from the Parliament. It is ſeated on the Cowes, which is navigable up to it in ſmall veſſels; 6 miles S. of Cowes, 17 of Southampton, and 91 SW. of London. Lon. 1. 15. W. Lat. 0. 40. N.

(3.) NEWPORT, a town of Monmouthſhire, on the Uſk, over which it has a handſome bridge, 4 miles above its mouth; with a good harbour, and a market on Sat. It had a caſtle and walls, relicts of which are ſtill viſible. It is 19 miles SW. of Monmouth, and 152 W. by N. of London. Lon. 3. 4. W. Lat. 51. 36. N.

(4.) NEWPORT, a town of S. Wales in Pembrokeſh. at the foot of a hill, near the coaſt; with a handſome church, an ancient caſtle, and a market on Sat. It is governed by a mayor, 12 aldermen, a recorder, &c. It is ſeated at the bottom of NEWPORT BAY, 18 miles NE. of St. David's, and 235 WNW. of London. Lon. 4. 50. W. Lat. 52. 6. N.

(5.) NEWPORT, a town of Shropſh. with a free ſchool, and a market on Sat. 17 miles E. of Shrewſbury, and 140 NW. of London. Lon. 2. 18. W. Lat. 52. 45. N.

(6.) NEWPORT, a maritime county of the United States, in Rhode Iſland, comprehending Rhode Iſland, Canonicut, Prudence, Block Iſland, and ſeveral ſmall iſlands. It is divided into 7 townſhips. It contained 13,934 citizens and 366 ſlaves in 1795.

(7.) NEWPORT, the metropolis of Rhode Iſland, and of the above county, is ſeated on the SW. end of Rhode Iſland, 5 miles from the coaſt, on a gentle aſcent affording a fine view of the harbour, along which it extends from N. to S. It has ſeveral fine ſtreets and ſquares, a ſtate-houſe, an academy, a public library, 9 churches, and a Jewiſh ſynagogue; and carries on duck and cotton manufactories, with a conſiderable trade. It is 30 miles SE. of Providence, 80 NE. of New York, and 292 of Philadelphia. Lon. 0. 43. W. Lat. 52. 4. N.

(8.) NEWPORT, a trading town of Delaware, in Newcaſtle county, on the N. ſide of the Chriſtiana, 3 miles above Wilmington, and 31 SW. of Philadelphia.

(9.) NEWPORT, a town of Maryland, in Charles county, 64 miles from Annapolis, and 195 from Philadelphia.

(10.) NEWPORT, a town of Ireland, in Mayo county, 123 miles from Dublin.

(11.) NEWPORT, a town of Ireland, in Tipperary, 86 miles from Dublin.

(12.) NEWPORT BAY. See N° 4.

(13.) NEW PORT GLASGOW. See PORT-GLASGOW.

(14.) NEWPORT PAGNEL, a town of England, in Bucks, with markets on Wed. and Sat. on a rivulet that runs into the Ouſe; famous for its manufactures of laces: 14 miles ENE. of Buckingham, 15 SSE. of Northampton, and 51 NNW. of London. Lon. 0. 43. W. Lat. 52. 4. N.

(15.) NEWPORT PRATTS, a ſea port town of Ireland, in Mayo, on Clew Bay, 8 miles W. of Caſtlebar. Lon. 9. 21. W. Lat. 53. 53. N.

NEW PURCHASE. See DARTMOUTH, N° 3.

NEW RIVER, a fine artificial river of London, brought from two ſprings at Chadwell and Amwell, near Ware in Herts, to ſupply the metropolis with water. (See AMWELL, N° 2.) It was completed in 1613, by Sir Hugh Middleton, who ſpent his fortune on this patriotic work. (See MIDDLETON, N° 2.) This river, with its various windings, is 38¾ miles and 26 poles long. It is under the management of a corporation called *the New River Company*, which is one of the moſt flouriſhing in London. (See ISLINGTON.) Where the new river paſſes the deep ſlope or bank of Amwell hill, and ſeems an ample pool of water, there is a little iſle, on which Mr Mylne has reared a monument to the virtues of Sir Hugh Middleton.

NEW ROSS. See ROSS, N° 12.

(1.) NEWRY, a conſiderable ſea-port town of Ireland, in Down county, on the ſide of a hill, at the foot of which runs the NEWRY; over which it has 2 ſtone bridges, and a 3d over a navigable

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canal, by which it communicates with Lough Neafir, and Carlingford Bay. In 1689, it was burnt by the D. of Berwick. It is of late much improved. It is 33 miles SSW. of Belfaſt, and 49 N. of Dublin. Lon. 6. 30. W. Lat. 54. 9. N.

(2.) NEWRY, a river of Ireland in Down county, which runs into Carlingford Bay, See N° 1.

(1.) * NEWS. *n. ſ.* without the ſingular, unleſs it be conſidered as ſingular; *Milton* has joined it with a ſingular verb. [from *new; nouvelles*, Fr.] 1. Freſh account of any thing.—As he was ready to be greatly advanced for ſome noble pieces of ſervice which he did, he heard *news* of me. *Sidney.*—When Rhea heard theſe *news*, ſhe fled from her huſband to her brother Saturn. *Raleigh.*—Evil *news* rides faſt, while good *news* baits. *Milton.*—

With ſuch amazement as weak mothers uſe,
And frantic geſture, he receives the *news*.
Waller.

We talk in ladies chambers love and *news*.
Cowley.

All our divinity is *news*,
And we have made of equal uſe
The pulpit and the ſteeple. *Denham.*

The amazing *news* of Charles at once was ſpread,
Our gracious prince was dead. *Dryden.*

—They have *news*-gatherers and intelligencers diſtributed into their ſeveral walks. *Spectator.* 2. Something not heard of before.—It is no *news* for the weak and poor to be a prey to the ſtrong and rich. *L'Eſtrange.* 3. Papers which give an account of the tranſactions of the preſent times. —Their papers, filled with a different party ſpirit divide the people into different ſentiments, who generally conſider rather the principles than the truth of the *news*-writer. *Addiſon.*—Advertiſe both in every *news*-paper; and let it not be your fault or mine, if our countrymen will not take warning. *Swift.*

(2.) NEWS, § 1. *def.* 3. See NEWS-PAPERS.

NEWSAM, 6 villages of Yorkſhire: 1. N. of Giſborn: 2. near Howden: 3, near Kighley: 4. in the pariſh of Kirby: 5. NW. of Ravenſworth Caſtle: 6. E. of Slingſby Caſtle.

NEW SCOTLAND. See NOVA SCOTIA.

NEWSHAM, a village of Durham, 5 miles from Durham, on the Tees; where the ford is, in which the ceremony is performed upon the induction of a new biſhop into his ſee, by the lord of Stocktown, who, at the head of the country gentlemen, advances to meet the biſhop, in the middle of the river, and preſents him with his truncheon, which the biſhop returns, and is then conducted in triumph by the people.

* NEWS-MONGER, *n. ſ.* [*news* and *monger.*] One that deals in news; one whoſe employment it is to hear and to tell news.—

Many tales devis'd,
Which oft the ear of greatneſs needs muſt hear,
By ſmiling pick-thanks and baſe *news-mongers*.
Shak.

—This was come as a judgment upon him for laying aſide his father's will, and turning ſtock-jobber, *newsmonger*, and buſy body. *Arbuthnot.*

NEWSOL. See NEUSOL.

NEW SOUTH WALES. See HOLLAND, N° VII, § 3; and WALES, N° 3.

NEW SPAIN. See MEXICO.

NEWS-PAPERS, *n. ſ.* periodical publications, daily, weekly, &c. for the purpoſe of communicating to the world every thing of importance, whether political or literary, &c. which is going on. They have tended much to the diſſemination of learning, and have ſerved many other valuable purpoſes; and while they are carried on with candour, impartiality, and ability, they are unqueſtionably a great national benefit. They were firſt publiſhed in England, Auguſt 22, 1462. *Journal des Savans*, a French paper, was firſt publiſhed in 1665, though one was printed in England, under the title of the *Public Intelligencer*, by Sir Roger L'Eſtrange, 1663, which he dropped on the publication of the firſt London Gazette. Newſpapers and pamphlets were prohibited by royal proclamation in 1680. Tho' at the revolution prohibitions of this kind were done away, and the preſs ſet at liberty, yet newſpapers were afterwards made objects of taxation, and for this cauſe were firſt ſtamped in 1713. The number of them however, gradually increaſed; and there were printed in the whole kingdom during the years 1775, 12,680,000; 1776, 12,830,000; 1777, 13,150,642; 1778, 13,240,059; 1779, 14,106,842; 1780, 14,217,371; 1781, 14,397,620; 1782, 15,272,519. They became afterwards ſtill more numerous, but the late increaſed duties for a time reduced the number. They appear now to be more numerous than ever.

NEW STYLE, firſt uſed in England in 1753, was introduced into the weſtern world by Pope Gregory XIII. See CHRONOLOGY, *Index.*

(1.) * NEWT. *n. ſ.* [*efete*, Saxon. *Newt* is ſuppoſed by *Skinner* to be contracted from *an eve.*] Eft; ſmall lizard: They are ſuppoſed to be appropriated, ſome to the land, and ſome to the water: they are harmleſs.—

O thou! whoſe ſelf-ſame mettle
Whereof thy proud child, arrogant man, is puft,
Engenders the black toad, and adder blue,
The gilded *newt*, and eyeleſs venom'd worm.
Shak.

Newts and blind worms do no wrong;
Come not near our fairy queen. *Shak.*

—Such humidity is obſerved in *newts* and water lizards, eſpecially if their ſkins be perforated or pricked. *Brown.*

(2.) NEWT. See LACERTA, § II, N° 2.

NEWTHORP, 1. A town of Nottinghamſhire, near Codnor caſtle: 2. in Yorkſhire, near Sherborn.

(1.) NEWTON, Sir Iſaac, one of the greateſt philoſophers and mathematicians the world has ever produced, was the only child of Mr John Newton of Coleſworth, near Grantham in Lincolnſh. who had an eſtate of about 120l. a-year, where Iſaac was born on Chriſtmas day 1642. His father dying when he was young, his mother's brother, a clergyman, Mr Ayſcouch, who lived near her, and directed her affairs, put her ſon to ſchool at Grantham. When he had finiſhed his ſchool education, his mother took him home, intending that he ſhould occupy his own eſtate. But his uncle happening to

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to find him in a hay loft at Grantham working a mathematical problem, and having otherwiſe obſerved the boy's mind to be uncommonly bent upon learning, he prevailed upon her to ſend him to Trinity College, Cambridge, where he himſelf had many friends. Iſaac was ſoon taken notice of by Dr Iſaac Barrow, who, obſerving his bright genius, contracted a great friendſhip for him. M. de Fontenelle tells us, "That in learning mathematics he did not ſtudy Euclid, who ſeemed to him too plain and ſimple, and unworthy of taking up his time. He underſtood him almoſt before he read him; and a caſt of his eye upon the contents of his theorems was ſufficient to make him maſter of them. He advanced at once to the geometry of Des Cartes, Kepler's optics, &c. It is certain, that he had made his great diſcoveries in geometry, and laid the foundation of his two famous works, the *Principia* and the *Optics*, by the time he was 24 years of age." In 1664, he took the degree of A. B. and in 1668 that of A. M. being elected the year before, fellow. He had before this time diſcovered the method of fluxions; and in 1669 he was choſen profeſſor of mathematics in the univerſity of Cambridge, upon the reſignation of Dr Barrow. In 1669, 70, & 71, he read a courſe of optical lectures in Latin, in the public ſchools of the univerſity; an Engliſh tranſlation of which was printed at London in 1728, in 8vo. as was the Latin original, in 1729, in 4to. From 1671 to 1679, he held a correſpondence with Mr Henry Oldenburg, ſecretary of the royal ſociety, and Mr John Collins, F. R. S. Theſe letters contain a variety of curious obſervations. Concerning the origin of his diſcoveries, we are told, that as he ſat alone in a garden, the falling of ſome apples from a tree led him into a ſpeculation on the power of gravity; that as this power is not diminiſhed at the remoteſt diſtance from the centre of the earth to which we can riſe, it appeared to him reaſonable to conclude, that it muſt extend much farther than was uſually thought; and purſuing this ſpeculation, by comparing the periods of the ſeveral planets with their diſtances from the ſun, he found, that if any power like gravity held them in their courſes, its ſtrength muſt decreaſe in the duplicate proportion of the increaſe of diſtance. This inquiry gave riſe to his writing the treatiſe which he publiſhed in 1687, under the name of *Mathematical Principles of Natural Philoſophy*; a work conſidered as the production of a celeſtial intelligence rather than of a man. This year the univerſity of Cambridge was attacked by king James II. when Mr Newton was one of its moſt zealous defenders, and was nominated one of the delegates of that univerſity to the high commiſſion court; and in 1688 he was choſen one of their members for the convention parliament, in which he ſat till it was diſſolved. In 1696, Mr Montague, then chancellor of the exchequer, and afterwards earl of Halifax, obtained for him of K. William the office of warden of the mint; in which employment he was of ſignal ſervice when the money was called in to be recoined. Three years after, he was appointed maſter of the mint; a place of very conſiderable profit, which he held till his death. In 1699, he was elected a member of the royal academy of ſciences at Paris. In 1701, he was a ſecond time choſen M. P. for the univerſity of Cambridge. In 1704 he publiſhed his *Optics*; which may be conſidered as a ſcience for which the world is entirely indebted to our author. In 1705, he was knighted by queen Anne. In 1707, he publiſhed his *Arithmetica Univerſalis*. In 1711, his *Analyſis per Quantitatum Series, Fluxiones et Differentias*, &c. was publiſhed by William Jones, Eſq. In 1712, ſeveral of his letters were publiſhed in the *Commercium Epiſtolicum*. In the reign of George I. he was better known at court than before. The princeſs of Wales, (afterwards Queen Caroline) often propoſed queſtions to him, and declared that ſhe thought herſelf happy to live at the ſame time with him, and have the pleaſure of his converſation. He had written a treatiſe of ancient chronology, which he did not think of publiſhing; but the princeſs defired an abſtract, which ſhe would never part with. However, a copy of it ſtole abroad, and was carried into France; where it was tranſlated and printed, with ſome obſervations, which were afterwards anſwered by Sir Iſaac. But, in 1728, the Chronology itſelf was publiſhed at London in 4to, and was attacked by ſeveral perſons, and as zealouſly defended by Sir Iſaac's friends. The main deſign of it was to find out, from ſome tracts of the moſt ancient Greek aſtronomy, what was the poſition of the colures with reſpect to the fixed ſtars, in the time of Chiron the centaur. As it is now known that theſe ſtars have a motion in longitude of one degree in 72 years, if it is once known through what fixed ſtars the colure paſſed in Chiron's time, by taking the diſtance of theſe ſtars from thoſe through which it now paſſes, we might determine what number of years has elapſed ſince Chiron's time. As Chiron was one of the Argonauts, this would fix the time of that famous expedition, and conſequently that of the Trojan war; the two great events upon which all the ancient Grecian chronology depends. Sir Iſaac places them 500 years nearer the birth of Chriſt than other chronologers uſually do. This great man had all along enjoyed a ſettled and equal ſtate of health to the age of 80, when he began to be afflicted with an incontinence of urine. However, for the five following years, he had great intervals of eaſe, which he procured by the obſervance of a ſtrict regimen. It was then believed that he had the ſtone; and when the paroxiſms were ſo violent, that large drops of ſweat ran down his face, he never expreſſed the ſmalleſt degree of impatience; but, as ſoon as he had a moment's eaſe, would ſmile and talk with his uſual cheerfulneſs. Till then he always read and wrote ſeveral hours a-day. He had the perfect uſe of all his ſenſes and underſtanding till the day before he died, which was on the 20th of March 1726-7, in the 85th year of his age.—He lay in ſtate in the Jeruſalem chamber at Weſtminſter, and on the 28th of March his body was conveyed into Weſtminſter abbey; the pall being ſupported by the Lord chancellor, the dukes of Montroſe and Roxburgh, and the earls of Pembroke, Suſſex, and Macclesfield. The biſhop of Rocheſter read the funeral ſervice, attended by all the clergy. The corpſe was interred at the entrance into the choir, where a noble monument is erected to

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his memory. Sir Isaac was of a middling stature, and in the latter part of his life somewhat inclined to be fat. His countenance was pleasing, yet venerable. He never used spectacles, and lost but one tooth during his whole life. His temper was so equal and mild, that no accident could disturb it. Of this the following instance is related. Sir Isaac had a favourite little dog, called *Diamond*; and being one day called out of his study, Diamond was left behind. When Sir Isaac returned, he found that Diamond having thrown down a lighted candle among some papers, the labour of many years was in flames. This loss, as Sir Isaac was then far advanced in years, was irretrievable; yet, without striking the dog, he only said, "Oh! Diamond! Diamond! thou little knowest the mischief thou hast done!" He was a great lover of peace; and would rather have chosen to remain in obscurity, than to have the calm of life ruffled by those storms and disputes which genius and learning often draw upon those that are peculiarly eminent for them. When he had any mathematical problems in his mind, he would never quit the subject, on any account. Dinner has been often three hours ready for him before he could be brought to table; and his man often said, when he has been getting up in a morning, he has sometimes begun to dress, and with one leg in his breeches sat down again on the bed, where he has remained for hours before he got his clothes on. From his love of peace, arose that unusual aversion which he had for all disputes; a steady unbroken attention, free from those recoilings incident to others, was his peculiar felicity; he knew it, and he knew the value of it. When some objections, hastily made to his discoveries concerning light and colours, induced him to lay aside his design of publishing his optic lectures, he "blamed his own imprudence for parting with so real a blessing as quiet, to run after a shadow," and resolved not to publish any more about that theory till he had put it above the reach of controversy, by the exactest experiments and the strictest demonstrations; and accordingly it has never been called in question since. In the same temper, after he had sent the MS. of his *Principia* to the Royal Society, with his consent to the printing of it by them, upon Mr Hook's injuriously insisting that himself had demonstrated Kepler's problem before our author, he determined rather than be involved again, in a controversy, to suppress the third book, and was very hardly prevailed upon to alter that resolution. The public was thereby a gainer; that book, which is indeed only a corollary of some propositions in the first, being originally drawn up in the popular way, with a design to publish it in that form, he was now convinced would be best not to be published without a strict demonstration. The amiable quality of modesty stands foremost in the character of this great man. It was in reality greater than can be easily imagined; yet it always continued without alteration, though the whole world, says Fontenelle, conspired against it; and though he was thereby robbed of his invention of fluxions. Nicholas Mercator publishing his *Logarithmotechnia* in 1668, when he gave the quadrature of the hyperbola by an infinite series, which was the first appearance in the learned world of a series of this sort drawn from the particular nature of the curve, and that in a manner very new and abstracted; Dr Barrow, then at Cambridge, where Mr Newton, at that time about 26 years of age, resided, recollected that he had met with the same thing in the writings of that young gentleman, and there not confined to the hyperbola only, but extended, by general forms, to all sorts of curves, even such as are mechanical; to their quadratures, their rectifications, and their centres of gravity; to the solids formed by their relations, and to the superfices of those solids; so, that, when their determinations were possible, the series stopped at a certain point, or at least their sums were given by stated rules: and, if the absolute determinations were impossible, they could yet be infinitely approximated: which is the happiest and most refined method, says Mr Fontenelle, of supplying the defects of human knowledge, that man's imagination could possibly invent. To be master of so fruitful and general a theory was a mine of gold to a geometrician; but it was a greater glory to have been the discoverer of so surprising and ingenious a system. So that Mr Newton, finding by Mercator's book, that he was in the way to it, and that others might follow in his tract, should naturally have been forward to open his treasures, and secure the property, which consisted in making the discovery; but he contented himself with his treasure which he had found, without regarding the glory. His MS. upon infinite series was communicated to none but Mr John Collins and lord Brounker; and even that had not been complied with, but for Dr Barrow, who would not suffer him to indulge his modesty so much as he desired. In a word he never talked either of himself or others, nor ever behaved in such a manner as to give the most malicious censurers the least occasion even to suspect him of vanity. He was candid and affable, and always put himself upon a level with his company. He never thought either his merit or his reputation sufficient to excuse him from any of the common offices of social life; no singularities, either natural or affected, distinguished him from other men. Though he was firmly attached to the church of England, he was averse to the persecution of the non-conformists. He judged of men by their manners; and the true schismatics, in his opinion, were the vicious and the wicked. Nor did he confine his principles to natural religion, for he was thoroughly persuaded of the truth of revelation; and amidst the great variety of books which he had constantly before him, that which he studied with the greatest application was the Bible: and he understood the nature and force of moral certainty as well as he did that of a strict demonstration. Sir Isaac did not neglect the opportunities of doing good, when the revenues of his patrimony, and a profitable employment, improved by a prudent œconomy put it in his power. We have two remarkable instances of his bounty and generosity; one to Mr M'Laurin, professor of mathematics at Edinburgh, to whom he offered 20l. a-year, and the other to his niece Barton, who had an annuity of 100l. settled upon her by him. When decency upon any

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any occasion required expence and shew, he was magnificent with a good grace: at all other times, that pomp, which seems great to low minds only, was utterly retrenched. He never married, and perhaps he never had leisure to think of it. It has been reported, that he once made love to a young lady, daughter of a neighbouring gentleman; that the marriage day was set, and the company convened; but that Sir Isaac being deeply immersed in study, forgot the appointment, and the lady would never more hear of him. It is certain that he never had any illicit connection with the sex. He left 32,000l. at his death; but made no will, which Mr Fontenelle tells us was because he thought a legacy was no gift. As to his works, besides what were published in his lifetime, there were found after his death, among his papers, various discourses upon the subjects of antiquity, history, divinity, chemistry, and mathematics, several of which were published at different times.

(2.) NEWTON, John, D. D. an eminent divine and mathematician, born at Oundle in Northamptonshire, in 1622. From school he was sent to Oxford in 1637, and took his degree of B. A. in 1641; of M. A. in 1642; and of D. D. in 1661; when he was appointed a king's chaplain, and rector of Ross in Herefordshire, where he died Dec. 25, 1678. Mr Wood says he was capricious. He wrote many useful works; particularly 1. *Astronomia Britannica*, 1656, 4to. 2. Help to Calculation, 1657, 4to. 3. *Trigonometria Britannica*, in 2 books, one translated from Gellibrand, the other his own; 1658, fol. 4. *Chiliades centum Logarithmorum*, 1659, and 1667. 5. Geometrical Trigonometry, 1659. 6. Mathematical Elements, 1660, 4to. 7. A Perpetual Diary, 1662. 8. Use of the Carpenter's Rule, 1667. 9. Ephemerides, 1667. 10. Rule of Interest, 1668. 11. Practical Gauging, &c. 1669. 12—15. Introductions to Rhetoric, Arithmetic, Astronomy, and Geography; 8vo, 1671, 1678. 16. The English Academy, 1677. 17. Cosmography, 1678.

(3.) NEWTON, Richard, D. D. the founder of Hertford college, an eminent clergyman, of whose origin no satisfactory account is recorded. By one writer he is said to have been a Northamptonshire gentleman; by another, we are told that his father enjoyed at Lavendon Grange in Bucks, a moderate estate, which is still in the family, though he lived in a house of Lord Northampton's in Yardley-Chace, where, in 1765, our doctor was born. All agree that the family from which he sprung had long been respectable, though its fortunes had been much injured during the great rebellion. Richard was educated in Westminster school, and from that foundation elected to a studentship of Christ-church, Oxford. In the list of graduates he is thus distinguished: "Newton (Richard), Christ-church, M. A. April 18th 1701; B. D. March 18th 1707; Hart-hall, D. D. December 7th 1710." He was appointed a tutor in Christ-church, and discharged the duties of that important office with honour to himself and advantage to the society of which he was a member. From Oxford he was called into Lord Pelham's family to superintend the education of the duke of Newcastle and his brother Mr Pelham; and by both these illustrious persons he was ever remembered with the most affectionate regard. In 1710 he was, by Dr Aldrich, inducted principal of Hart-hall, which was then an appendage to Exeter college. From this state of dependence Dr Newton wrested it against much opposition, especially from the learned Dr Conybeare, afterwards Bp. of Bristol. In no contest were ever two men more equally matched; and the papers that passed between them, like Junius's letters, deserve to be collected for the energetic beauty of their style and the ingenuity of their arguments. Dr Newton, however, proved successful; and in 1740 obtained a charter, converting *Hart-Hall*, into *Hertford College*; of which, at a considerable expence to himself, and with great aid from his numerous friends, he was thus the founder and first head. Though this excellent man was Mr Pelham's tutor, and had by him been more than once employed to furnish king's speeche, he never received the smallest preferment from his pupil when first minister. But Dr Compton, Bp. of London, who had a just sense of his merits, had, at an early period of his life, collated him to the rectory of Sudbury in Northamptonshire, which he held together with the headship of Hart-hall. He resided for some years on that living, and discharged all the parts of his office with exemplary care and fidelity. Being an enemy to pluralities, he requested leave of Dr Gibson, Bp. of London, to resign his rectory in favour of his curate. But the Bp. being under an engagement to confer the living on another, Dr Newton retained it, but bestowed all the emoluments upon works of charity, and on his curates who faithfully discharged their duty. Dr Sherlock, who succeeded Gibson, granted Dr Newton's request, by accepting his resignation, and collating to the rectory Mr Saunders, who was the last of his curates. Newton was afterwards promoted to a canonry of Christ-church, but did not long enjoy it; for he died in April 1753, in the 78th year of his age. He was a polite scholar, an accomplished gentleman, a zealous friend to religion, the clergy, and the poor; and such was his liberality of sentiment, that he admitted to his friendship every man, of whatever religious creed, who was earnestly employed in the promotion of virtue and piety. Of his works, his *Theophrastus* was published after his death; and his *Pluralities Indefensible*; but he published several other pieces during his life, and left a volume of sermons prepared for the press.

(4.) NEWTON, Thomas, a learned author of the 16th century, eminent for his Latin poetry. Though in orders, he practised physic and kept an academy. He died in 1607.

(5.) NEWTON, Thomas, D. D. Bp. of Bristol, was born Jan. 1, 1704. His father, John Newton, was a considerable brandy and cyder merchant, who, by industry and integrity, having acquired a competent fortune, left off trade several years before he died. He received the first part of his education in the free school of Litchfield, whence he was removed to Westminster school, in 1717, under the care of Dr Friend and Dr Nicoll. While he was at Westminster, he became acquainted with William Murray, the late earl of Mansfield, with whom he lived on terms of the highest

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higheſt friendſhip to the laſt. He continued ſix years at Weſtminſter ſchool, five of which he paſſed in the college. He afterwards went to Trinity college, Cambridge, where he reſided 8 months yearly, till he had taken his degree of A. B. Being choſen Fellow, he came afterwards to ſettle in London, and was ordained deacon in Dec. 1729, and prieſt in Feb. 1730, by Biſhop Gibſon. He was firſt curate at St George's, Hanover-ſquare; and continued for ſeveral years aſſiſtant to Dr Trebeck. His firſt preferment was that of reader and preacher at Groſvenor chapel, in South Audley Street. This introduced him to the family of lord Tyrconnel, to whoſe ſon he became tutor. He continued in this ſituation for many years, on terms of great intimacy and friendſhip with lord and lady Tyrconnel. In ſpring 1744, he was, through the intereſt of the earl of Bath, his great friend and patron, preſented to the rectory of St Mary-le-bow. At the commencement of 1745, he took his degree of D. D. In ſpring 1747, he was choſen lecturer of St George's, Hanover-ſquare. In Auguſt 1749, he married the eldeſt daughter of Dr Trebeck; an excellent young woman, with whom he lived very happy in mutual love and harmony near 7 years. In 1749 he publiſhed his edition of Milton's Paradiſe Loſt, with notes, which, in 1755, had gone through 8 editions. After the Paradiſe Loſt, it was judged (ſays he) proper that Dr Newton ſhould alſo publiſh the Paradiſe Regained, and other poems of Milton; but theſe things he thought detained him from other more material ſtudies, though he gained by them more than Milton did by all his works put together. But his greateſt gain (he ſays) was their firſt introducing him to the friendſhip and intimacy of Bp. Warburton and Dr Jortin. In 1754 he loſt his father, at the age of 83; and within a few days his wife, at the age of 38. This was the ſevereſt trial he ever underwent, and almoſt overwhelmed him. At that time he was, fortunately, engaged in writing his *Diſſertations on the Prophecies*; for in any affliction he never found a more effectual remedy than plunging deep into ſtudy, and fixing his thoughts intenſely upon other ſubjects. The firſt volume was publiſhed the following winter: but the other did not appear till three years afterwards; and as a reward for his paſt and an incitement to future labours, he was appointed to preach Boyle's lecture: 1250 copies of the Diſſertation were taken at the firſt impreſſion, and 1000 at every other edition: and after having gone through 6 editions in Engliſh, they were tranſlated into the German and Daniſh languages; and received the warmeſt encomiums from perſons of learning and rank. In ſpring 1757, he was made prebendary of Weſtminſter and dean of Saliſbury; and in Oct. ſub-almoner to his majeſty. He married in Sept. 1761, the widow of the rev. Mr Hand, and daughter of John Lord Viſcount Liſburn. In the ſame month he was appointed biſhop of Briſtol. In winter 1764, Dr Stone, the primate of Ireland, dying, Mr Grenville ſent for Newton, and offered him the primacy, but he declined it. In 1768 he was made dean of St Paul's. From this time to his death his health declined. On Sat. the 9th Feb. 1782, he found his breath much affected by the froſt; and on Thurſ. the 14th he died without a ſigh. Of his numerous works, his *Diſſertations on the Prophecies* are by much the moſt valuable. His learning was very conſiderable, and he was the firſt dignitary of the church of England who avowed his belief of the final reſtitution of all things to harmony and happineſs.

(6.) NEWTON, in geography, a borough of Hampſhire, in the Iſle of Wight; 14 miles S. of Southampton, and 93 W. by S. of London. It ſends 2 members to parliament. Lon. 1. 16. W. Lat. 50. 43. N.

(7.) NEWTON, a borough of Lancaſhire, with a market on Sat. It is an inconſiderable town, yet it ſends 2 members to parliament. It lies 5 miles N. of Warrington, and 190 NW. of London. Lon. 2. 45. W. Lat. 53. 28. N.

(8.) NEWTON, or NEWTOWN, a town of N. Wales, in Montgomeryſhire, with a market on Sat. on the Severn, 7 miles SW. of Montgomery, and 169 WNW. of London. Lon. 3. 12. W. Lat. 52. 21. N.

(9.) NEWTON, or NEWTOWN, a town of Connecticut, in Fairfield county, 26 miles WNW. of New-Haven, and 175 from Philadelphia. Lon. 1. 26. E. of that city. Lat. 41. 27. N.

(10.) NEWTON, a town of Pennſylvania, the capital of Bucks County, with an academy, church and court-houſe; 25 miles NE. by E. of Philadelphia. Lon. 0. 13. E. of that city. Lat. 40. 14. N.

(11.) NEWTON, or NEWTOWN, a town of Virginia in Frederic County, 173 miles NNW. of Richmond.

(12.) NEWTON, a pariſh of Scotland, in Mid Lothian, nearly of a circular figure, about 3 miles in diameter. The ſoil is pretty fertile. The pariſh abounds with coal, of which there are different ſeams running through it from N. to S. All of them have been partly wrought, ſome of them for 200 years. Six of theſe are termed flat ſeams, as they lie in a horizontal poſition; the other 13 are ſtyled *edge ſeams*, and lie in an angle of 9°, being from 2 to 10 feet thick. Some of them are now wrought by pits ſunk 27 fathoms below the ſea-level. The population, conſiſting chiefly of colliers and carters, was 1135 in 1793; and had decreaſed 64, ſince 1755.

(13.) NEWTON, or NEWTOWN, a village of Renfrewſhire, in the pariſh of Mearns, containing 240 inhabitants in 1794. It has ſeveral extenſive print-fields.

(14.) NEWTON UPON AYR, a pariſh of Scotland, in Ayrſhire, 1½ mile long and 1 broad, on the banks of the Ayr, diſjoined in 1779 from the united pariſhes of MONKTOWN and PRESTICK. It abounds with coal, of which there are two ſeams, 4 feet thick each. The upper one only has yet been wrought. It has a large ſteam engine. The population, in 1791, was 1689, and had increaſed 1108 ſince 1755. The ſoil is a light blowing ſand; 200 acres are arable; 150 common. Rye-graſs, oats, barley, and potatoes, are the chief crops.

(15.) NEWTON UPON AYR, a ſea port town, and burgh of barony, in the above pariſh, to which it gives name, on the Ayr; conſiſting of one large ſtreet 680 yards long, and 80 broad, with other 3 ſmaller. It has a harbour for veſſels under 140 tons,

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tons, and a light-house. Ship-building is carried on with spirit and success; as well as a rope-work and salmon-fishing. Cod, haddocks, ling, mackarel, lobsters, &c. are also caught. But the chief trade is the exportation of coals; above 300 vessels annually sail to Dublin, Belfast, &c. loaded with that article. Wood is imported from the Mediterranean. Newton has two charters from James VI. dated 1595 and 1600; in which it is styled *Nova Villa super Ayr*. It is governed by 2 bailies, a treasurer, and 6 counsellors. The freemen have considerable privileges.

(16—68.) NEWTON is also the name of 53 English villages, and it makes part of the names of 50 others; but which are not of sufficient importance to be described.

NEWTON-ABBOT, a town in Devonshire, which has 3 fairs; viz. on June 24th, the 1st Wednesday in September, and November 6.

NEWTON-BREDA, a town of Ireland, in Down.

NEWTON-BURDET, a town of Leicester, NE. of Billesdon.

NEWTON-BUSHEL, a large town of Devonshire, seated on the Teign, with a market on Wednesday; 15 miles S. by W. of Exeter, and 188 WSW. of London. Lon. 3. 38. W. Lat. 50. 32. N.

NEWTON-DOUGLAS, a burgh of barony, formerly called NEWTON-STEWART, seated on the W. bank of the Cree; partly in the parish of Minnigaff and partly in that of Penningham; on the high road from Dumfries to Port-Patrick. It was founded about 1707, by Mr Stewart of Castle-Stewart, a second son of the E. of Galloway; who named it *Newton-Stewart*, and encouraged settlers, by building a fine bridge at the N. end of the town, over the Cree, which connects the counties of Galloway and Kirkcudbright. By the patriotic exertions of that gentleman, as well as of the present proprietor, Wm. Douglas, Esq. of Castle-Douglas (from whom it has its present name, and who acquired the superiority in 1788), it flourished greatly, and was erected into a burgh of barony; and, in 1793, contained above 1100 inhabitants. Under the patronage of Mr Douglas and Mr David Dale of Glasgow, a cotton manufacture has been established; as well as a carpet manufactory, and several tan-works. A branch of one of the Paisley banks has also opened a counting-house in it. The Cree is navigable up to within 2 m. of it. It lies 26 m. E. by N. of Port-Patrick.

NEWTONIAN, *adj.* of, or invented by Sir Isaac Newton, or belonging to his discoveries.

NEWTONIAN PHILOSOPHY.

SECT. I. DEFINITIONS *and* HISTORY *of the* NEWTONIAN PHILOSOPHY.

NEWTONIAN PHILOSOPHY, the doctrine of the universe, and particularly of the heavenly bodies, their laws, affections, &c. as delivered by Sir Isaac Newton.

The term *Newtonian Philosophy* is applied very differently; whence divers confused notions have arisen relating thereto. Some authors under this philosophy include all the corpuscular philosophy, considered as it now stands corrected and reformed by the discoveries and improvements made in several parts thereof by Sir Isaac Newton. In this sense Gravesande calls his elements of physics *Introductio ad Philosophiam Newtonianam*. And in this sense the Newtonian is the same with the new philosophy; and stands contradistinguished from the Cartesian, the Peripatetic, and the ancient Corpuscular.

Others, by *Newtonian Philosophy*, mean the method or order which Sir Isaac Newton observes in philosophizing; viz. the reasoning and drawing of conclusions directly from phenomena, exclusive of all previous hypotheses; the beginning from simple principles; deducing the first powers and laws of nature from a few select phenomena, and then applying those laws, &c. to account for other things. And in this sense the *Newtonian Philosophy* is the same with the EXPERIMENTAL PHILOSOPHY, and stands opposed to the ancient CORPUSCULAR.

Others, by *Newtonian Philosophy*, mean that wherein physical bodies are considered mathematically, and where geometry and mechanics are applied to the solution of the appearances of nature. In this sense the Newtonian is the same with the *mechanical* and *mathematical philosophy*.

Others again, by *Newtonian Philosophy*, understand that part of physical knowledge which Sir Isaac Newton has handled, improved, and demonstrated, in his *Principia*.

Others, lastly, by *Newtonian Philosophy*, mean the new principles which Sir Isaac Newton has brought into philosophy, the new system founded thereon, and the new solutions of phenomena thence deduced; or that which characterizes and distinguishes his philosophy from all others. This is the sense wherein we shall chiefly consider it.

The origin and history of this philosophy has been given under the article NEWTON, N° 1. It was first made public in 1687 by the author, then a fellow of Trinity-college, Cambridge; and in 1713, republished with considerable improvements.—Several authors have since attempted to make it plainer, by setting aside many of the more sublime mathematical researches, and substituting either more obvious reasonings or experiments in lieu thereof; particularly Whiston in his *Prælect. Phys. Mathemat.* Gravesande in *Element. et Instit.* and Dr Pemberton in his *View*.

SECT. II. DEFINITIONS *on which the* NEWTONIAN PHILOSOPHY *is founded.*

THE whole of the *Newtonian Philosophy*, as delivered by the author, is contained in his *Principia*, or *Mathematical Principles of Natural Philosophy*. He founds his system on the following definitions:

1. The quantity of MATTER is the measure of the same, arising from its density and bulk conjunctly.—Thus air of a double density, in a double space,

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ſpace, is quadruple in quantity; in a triple ſpace, ſextuple in quantity, &c.

2. The quantity of MOTION is the meaſure of the ſame, ariſing from the velocity and quantity of matter conjunctly. This is evident; becauſe the motion of the whole is the motion of all its parts; and therefore in a body double in quantity, with equal velocity, the motion is double, &c.

3. The VIS INERTÆ, or innate force of matter, is a power of reſiſting, by which every body, as much as in it lies, endeavours to perſevere in its preſent ſtate, whether it be of reſt, or moving uniformly forward in a right line.—This definition is proved to be juſt, only by the difficulty we find in moving any thing out of its place; and this difficulty is by ſome reckoned to proceed only from gravity. They contend, that in thoſe caſes where we can prevent the force of gravity from acting upon bodies, this power of reſiſting becomes inſenſible, and the greateſt quantities of matter may be put in motion by the very leaſt force. Thus there have been balances formed ſo exact, that when loaded with 200 weight in each ſcale, they would turn by the addition of a ſingle drachm. In this caſe 400 lb. of matter was put in motion by a ſingle drachm, *i. e.* by $\frac{1}{115200}$ part of its own quantity; and even this ſmall weight, they ſay, is only neceſſary on account of the inaccuracy of the machine; ſo that we have no reaſon to ſuppoſe, that, if the friction could be entirely removed, it would take more force to move a ton weight than a grain of ſand. This objection, however, is not taken notice of by Sir Iſaac; and he beſtows on the reſiſting power above mentioned the name of VIS INERTIÆ; a phraſe which is perhaps not well choſen, and with which inferior writers have endeavoured to make their readers merry at the expenſe of Newton. *A force of inactivity*, it has been ſaid, is a *forceleſs* force; and analogous to a *black white*, a *cold heat*, and a *tempeſtuous calm*.

But objections of more importance have been made to the whole of this doctrine than thoſe which merely reſpect the term *vis inertiæ*. "An endeavour to remain at reſt (ſays Mr Young, in his *Examination of the 3d and 4th Definition of the 1ſt Book of the Principia*) is unneceſſary, whilſt nothing attempts to diſturb the reſt. It is likewiſe impoſſible to be conceived, as it implies a contradiction. A man, by oppoſing force to force, may endeavour not to be moved; but this oppoſition is an endeavour to *move*, not with a *deſign* to move, but by counteracting another force to *prevent* being moved. An endeavour not to move, therefore, cannot exiſt in bodies, becauſe it is abſurd; and if we appeal to fact, we ſhall find every body in an actual and conſtant endeavour to move." It has been likewiſe obſerved, and we think juſtly, that "if bodies could *continue* to move by any innate force, they might alſo *begin* to move by that force; for the ſame cauſe which can move a body with a given velocity at one time, could do it, if preſent, at any other time; and therefore if the force by which bodies continue in motion were innate and eſſential to them, they would begin to move of themſelves, which is not true." Newton indeed ſays, that this innate force is the cauſe of motion under certain circumſtances only, or when the body is acted upon by a force impreſſed *ab extra*. But if this impreſſed force do not continue as well as begin the motion; if it ceaſe the inſtant that the impreſſion is over, and the body continue to move by its *vis inertiæ*, why is the body ever ſtopped? "If, in the beginning of the motion, the body, by its innate force, overcomes a certain reſiſtance of friction and air; in any following times, the force being undiminiſhed, it will overcome the ſame reſiſtance for ever. Theſe reſiſtances, therefore, could never change the ſtate of a moving body, becauſe they cannot change the quantity of its motive force. But this is contrary to univerſal experience." For theſe reaſons we are inclined to think that bodies are wholly paſſive; that they endeavour nothing; and that they continue in motion, not by any innate force or *vis inſita*, but by that force, whatever it be, which begins the motion, and which, whilſt it remains with the moving body, is gradually diminiſhed, and at laſt overcome by oppoſite forces, when the body of courſe ceaſes to move.

4. An IMPRESSED FORCE is an action exerted upon a body, in order to change its ſtate, either of reſt, or of moving uniformly forward in a right line.—This force conſiſts in the action only, and remains no longer in the body when the action is over. For a body maintains every new ſtate it acquires by its *vis inertiæ* only. It is here implied, and indeed fully expreſſed, that motion is not continued by the ſame power that produced it. Now there are two grounds on which the truth of this doctrine may be ſuppoſed to reſt.

"1ſt, On a direct proof that the impreſſed force does not remain in the body, either by ſhowing the nature of the force to be tranſitory, and incapable of more than its firſt action; or that it acts only on the ſurface, and that the body eſcapes from it; or that the force is ſomewhere elſe, and not remaining in the body. But none of theſe direct proofs are offered.

"2dly, It may reſt on an indirect proof, that there is in the nature of body a ſufficient cauſe for the continuance of every new ſtate acquired; and that therefore any adventitious force to continue motion, though neceſſary for its production, is ſuperfluous and inadmiſſible. As this is the very ground on which the ſuppoſition ſtands, it ought to have been indubitably certain that the innate force of the body is ſufficient to perpetuate the motion it has once acquired, before the other agent, by which the motion was communicated, had been diſmiſſed from the office. But the innate force of body has been ſhown not to be that which continues its motion; and therefore the proof, that the impreſſed force does not remain in the body, fails. Nor indeed is it in this caſe deſirable to ſupport the proof, becauſe we ſhould then be left without any reaſon for the continuance of motion." When we mention an *impreſſed force*, we mean ſuch a force as is communicated either at the ſurface of the body or by being diffuſed through the maſs.

5. A CENTRIPETAL FORCE is that by which bodies are drawn, impelled, or any way tend towards a point, as to a centre.—The quantity of

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any

any centripetal force may be conſidered as of three kinds, abſolute, accelerative, and motive.

6. The *abſolute* quantity of a centrifugal force is the meaſure of the ſame, proportional to the efficacy of the cauſe that propagates it from the centre, through the ſpaces round about.

7. The *accelerative* quantity of a centripetal force is the meaſure of the ſame, proportional to the velocity which it generates in a given time.

8. The *motive* quantity of a centripetal force is a meaſure of the ſame, proportional to the motion which it generates in a given time.—This is always known by the quantity of a force equal and contrary to it, that is juſt ſufficient to hinder the deſcent of the body.

SECT. III. *Of* TIME, SPACE, PLACE, *and* MOTION.

SCHOLIUM I. Abſolute, true, and mathematical TIME, of itſelf, and from its own nature, flows equably, without regard to any thing external, and, by another name, is called *duration*. Relative, apparent, and common time, is ſome ſenſible and external meaſure of duration, whether accurate or not, which is commonly uſed inſtead of true time; ſuch as an hour, a day, a month, a year, &c.

II. Abſolute SPACE, in its own nature, without regard to any thing external, remains always ſimilar and immoveable. Relative ſpace is ſome moveable dimenſion or meaſure of the abſolute ſpaces; and which is vulgarly taken for immoveable ſpace. Such is the dimenſion of a ſubterraneous, an aerial, or celeſtial ſpace, determined by its poſition to bodies, and which is vulgarly taken for immoveable ſpace; as the diſtance of a ſubterraneous, and aerial, or celeſtial ſpace, determined by its poſition in reſpect of the earth. Abſolute and relative ſpace are the ſame in figure and magnitude; but they do not remain always numerically the ſame. For if the earth, for inſtance, moves, a ſpace of our air which, relatively and in reſpect of the earth, remains always the ſame, will at one time be one part of the abſolute ſpace into which the earth paſſes; at another time it will be another part of the ſame; and ſo, abſolutely underſtood, it will be perpetually mutable.

III. PLACE is a part of ſpace which a body takes up: and is, according to the ſpace, either abſolute or relative. Our author ſays it is *part* of ſpace; not the ſituation, nor the external ſurface of the body. For the places of equal ſolids are always equal; but their ſuperficies, by reaſon of their diſſimilar figures, are often unequal. Poſitions properly have no quantity, nor are they ſo much the places themſelves as the properties of places. The motion of the whole is the ſame thing with the ſum of the motions of the parts; that is, the tranſlation of the whole out of its place is the ſame thing with the ſum of the tranſlations of the parts out of their places: and therefore the place of the whole is the ſame thing with the ſum of the places of the parts; and for that reaſon it is internal, and in the whole body.

IV. Abſolute MOTION is the tranſlation of a body from one abſolute place into another, and relative motion the tranſlation from one relative place into another. Thus, in a ſhip under ſail, the relative place of a body is that part of the ſhip which the body poſſeſſes, or that part of its cavity which the body fills, and which therefore moves together with the ſhip: and relative reſt is the continuance of the body in the ſame part of the ſhip, or of its cavity. But real abſolute reſt is the continuance of the body in the ſame part of that immoveable ſpace in which the ſhip itſelf, its cavity, and all that it contains, is moved. Wherefore, if the earth is really at reſt, the body which relatively reſt in the ſhip will really and abſolutely move with the ſame velocity which the ſhip has on the earth. But if the earth alſo moves, the true and abſolute motion of the body will ariſe, partly from the true motion of the earth in immoveable ſpace; partly from the relative motion of the ſhip on the earth: and if the body moves alſo relatively in the ſhip, its true motion will ariſe partly from the true motion of the earth in immoveable ſpace, and partly from the relative motions as well of the ſhip on the earth as of the body in the ſhip; and from theſe relative motions will ariſe the relative motion of the body on the earth. As if that part of the earth where the ſhip is, was truly moved towards the eaſt, with a velocity of 10010 parts; while the ſhip itſelf with a freſh gale is carried towards the weſt, with a velocity expreſſed by 10 of theſe parts; but a ſailor walks in the ſhip towards the eaſt with one part of the ſaid velocity: then the ſailor will be moved truly and abſolutely in immoveable ſpace towards the eaſt with a velocity of 1001 parts; and relatively on the earth towards the weſt, with a velocity of 9 of thoſe parts.

Abſolute time, in aſtronomy, is diſtinguiſhed from relative, by the equation or correction of the vulgar time. For the natural days are truly unequal, though they are commonly conſidered as equal, and uſed for a meaſure of time: aſtronomers correct this inequality for their more accurate deducing of the celeſtial motions. It may be that there is no ſuch thing as an equable motion whereby time may be accurately meaſured. All motions may be accelerated or retarded; but the true or equable progreſs of abſolute time is liable to no change. The duration or perſeverance of the exiſtence of things remains the ſame, whether the motions are ſwift or ſlow, or none at all; and therefore ought to be diſtinguiſhed from what are only ſenſible meaſures thereof, and out of which we collect it by means of the aſtronomical equation. The neceſſity of which equation for determining the times of a phenomenon is evinced, as well from the experiments of the pendulum clock as by eclipſes of the ſatellites of Jupiter.

As the order of the parts of time is immutable, ſo alſo is the order of the parts of ſpace. Suppoſe thoſe parts to be moved out of their places, and they will be moved (if we may be allowed the expreſſion) out of themſelves. For times and ſpaces are, as it were, the places of themſelves as of all other things. All things are placed in time as to order of ſucceſſion; and in ſpace as to order of ſituation. It is from their eſſence or nature that they are places; and that the primary places

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places of things ſhould be moveable, is abſurd. Theſe are therefore the abſolute places; and tranſlations out of thoſe places are the only abſolute motions.

But becauſe the parts of ſpace cannot be ſeen, or diſtinguiſhed from one another by the ſenſes, therefore in their ſtead we uſe ſenſible meaſures of them. For, from the poſitions and diſtances of things from any body, conſidered as immoveable, we define all places; and then with reſpect to ſuch places, we eſtimate all motions, conſidering bodies as transferred from ſome of thoſe places into others. And ſo, inſtead of abſolute places and motions, we uſe relative ones; and that without any inconvenience in common affairs: but in philoſophical diſquiſitions we ought to abſtract from our ſenſes, and conſider things themſelves diſtinct from what are only ſenſible meaſures of them. For it may be, that there is no body really at reſt, to which the places and motions of others may be referred.

But we may diſtinguiſh REST and MOTION, abſolute and relative, one from the other, by their properties, cauſes, and effects. It is a property of reſt, that bodies really at reſt do reſt in reſpect of each other. And therefore, as it is poſſible, that, in the remote regions of the fixed ſtars, or perhaps far beyond them, there may be ſome body abſolutely at reſt, though it be impoſſible to know from the poſition of bodies to one another in our regions, whether any of theſe do keep the ſame poſition to that remote body; it follows, that abſolute reſt cannot be determined from the poſition of bodies in our regions.

It is a property of motion, that the parts which retain given poſitions to their wholes do partake of the motion of their wholes. For all parts of revolving bodies endeavour to recede from the axis of motion; and the impetus of bodies moving forwards ariſes from the joint impetus of all the parts. Therefore, if ſurrounding bodies are moved, thoſe that are relatively at reſt within them will partake of their motion. Upon which account the true and abſolute motion of a body cannot be determined by the tranſlation of it from thoſe only which ſeem to reſt; for the external bodies ought not only to appear at reſt, but to be really at reſt. For otherwiſe all included bodies, beſide their tranſlation from near the ſurrounding ones, partake likewiſe of their true motions; and though that tranſlation was not made, they would not really be at reſt, but only ſeem to be ſo. For the ſurrounding bodies ſtand in the like relation to the ſurrounded, as the exterior part of a whole does to the interior, or as the ſhell does to the kernel; but if the ſhell moves, the kernel will alſo move, as being part of the whole, without any removal from near the ſhell.

A property near akin to the preceding is, that if a place is moved, whatever is placed therein moves along with it; and therefore a body which is moved from a place in motion, partakes alſo of the motion of its place. Upon which account all motions from places in motion are no other than parts of entire and abſolute motions; and every entire motion is compoſed of the motion of the body out of its firſt place, and the motion of this place out of its place; and ſo on, until we come to ſome immoveable place, as in the above-mentioned example of the ſailor. Wherefore entire and abſolute motions can be no otherwiſe determined than by immoveable places. Now, no other places are immoveable but thoſe that from infinity to infinity do all retain the ſame given poſitions one to another; and upon this account muſt ever remain unmoved, and do thereby conſtitute what we call IMMOVEABLE SPACE.

The cauſes, by which true and relative motions are diſtinguiſhed one from the other, are the forces impreſſed upon bodies to generate motion. True motion is neither generated nor altered, but by ſome force impreſſed upon the body moved: but relative motion may be generated or altered without any force impreſſed upon the body. For it is ſufficient only to impreſs ſome force on other bodies with which the former is compared, that, by their giving way, that relation may be changed, in which the relative reſt or motion of the other body did conſiſt. Again, true motion ſuffers always ſome change from any force impreſſed upon the moving body; but relative motion does not neceſſarily undergo any changes by ſuch force. For if the ſame forces are likewiſe impreſſed on thoſe other bodies with which the compariſon is made, that the relative poſition may be preſerved; then that condition will be preſerved, in which the relative motion conſiſts. And therefore any relative motion may be changed when the true motion remains unaltered, and the relative may be preſerved when the true motion ſuffers ſome change. Upon which account true motion does by no means conſiſt in ſuch relations.

SECT. IV. *Of the* DIFFERENCE *between* ABSOLUTE *and* RELATIVE MOTION.

The effects which diſtinguiſh abſolute from relative motion are, the forces of receding from the axis of circular motion. For there are no ſuch forces in a circular motion purely relative; but, in a true and abſolute circular motion, they are greater or leſs according to the quantity of the motion. If a veſſel, hung by a long cord, is ſo often turned about that the cord is ſtrongly twiſted, then filled with water, and let go, it will be whirled about the contrary way; and while the cord is untwiſting itſelf, the ſurface of the water will at firſt be plain, as before the veſſel began to move; but the veſſel by gradually communicating its motion to the water, will make it begin ſenſibly to revolve, and recede by little and little from the middle, and aſcend to the ſides of the veſſel, forming itſelf into a concave figure; and the ſwifter the motion becomes, the higher will the water riſe, till at laſt, performing its revolutions in the ſame times with the veſſel, it becomes relatively at reſt in it. This aſcent of the water ſhows its endeavour to recede from the axis of its motion; and the true and abſolute circular motion of the water, which is here directly contrary to the relative, diſcovers itſelf, and may be meaſured by this endeavour. At firſt, when the relative motion in the water was greateſt, it produced no endeavour to recede from the axis; the water ſhowed no tendency to the circumference, nor any aſcent towards the ſides of the veſſel, but remained of a plain ſurface; and therefore its true

circular

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circular motion had not yet begun. But afterwards, when the relative motion of the water had decreased, the aſcent thereof towards the ſides of the veſſel proved its endeavour to recede from the axis; and this endeavour ſhowed the real circular motion of the water perpetually increaſing, till it had acquired its greateſt quantity, when the water reſted relatively in the veſſel. And therefore this endeavour does not depend upon any tranſlation of the water in reſpect of the ambient bodies; nor can true circular motion be defined by ſuch tranſlations. There is only one real circular motion of any one revolving body, correſponding to only one power of endeavouring to recede from its axis of motion, as its proper and adequate effect: but relative motions in one and the ſame body are innumerable, according to the various relations it bears to external bodies; and, like other relations, are altogether deſtitute of any real effect, otherwiſe than they may perhaps participate of that only true motion. And therefore, in the ſyſtem which ſuppoſes that our heavens, revolving below the ſphere of the fixed ſtars, carry the planets along with them, the ſeveral parts of thoſe heavens and the planets, which are indeed relatively at reſt in their heavens, do yet really move. For they change their poſition one to another, which never happens to bodies truly at reſt; and being carried together with the heavens, participate of their motions, and, as parts of revolving wholes, endeavour to recede from the axis of their motion.

Wherefore relative quantities are not the quantities themſelves whoſe names they bear, but thoſe ſenſible meaſures of them, either accurate or inaccurate, which are commonly uſed inſtead of the meaſured quantities themſelves. And then, if the meaning of words is to be determined by their uſe, by the names TIME, SPACE, PLACE, and MOTION, their meaſures are properly to be underſtood; and the expreſſion will be unuſual and purely mathematical, if the meaſured quantities themſelves are meant.

It is indeed a matter of great difficulty to diſcover, and effectually to diſtinguiſh, the true motions of particular bodies from thoſe that are only apparent: becauſe the parts of that immoveable ſpace in which thoſe motions are performed, do by no means come under the obſervation of our ſenſes. Yet we have ſome things to direct us in this intricate affair; and theſe ariſe partly from the apparent motions, partly from the forces which are the cauſes and effects of the true motions. For inſtance, if two globes, kept at a given diſtance one from the other by a cord that connects them, were revolved about their common centre of gravity; we might, from the tenſion of the cord, diſcover the endeavour of the globes to recede from the axis of motion, and thence we might compute the quantity of their circular motions. And then, if any equal forces ſhould be impreſſed at once on the alternate faces of the globes to augment or diminiſh their circular motions, from the increaſe or decreaſe of the tenſion of the cord, we might infer the increment or decrement of their motions; and thence would be found on what faces thoſe forces ought to be impreſſed, that the motions of the globes might be moſt augmented; that is, we might diſcover their hindermoſt faces, or thoſe which follow in the circular motion. But the faces which follow being known, and conſequently the oppoſite ones that precede, we ſhould likewiſe know the determination of their motions. And thus we might find both the quantity and determination of this circular motion, even in an immenſe vacuum, where there was nothing external or ſenſible, with which the globes might be compared. But now, if in that ſpace ſome remote bodies were placed that kept always a given poſition one to another, as the fixed ſtars do in our regions; we could not indeed determine from the relative tranſlation of the globes among thoſe bodies, whether the motion did belong to the globes or to the bodies. But if we obſerved the cord, and found that its tenſion was that very tenſion which the motions of the globes required, we might conclude the motion to be in the globes, and the bodies to be at reſt; and then, laſtly, from the tranſlation of the globes among the bodies, we ſhould find the determination of their motions.

SECT. V. *Of the* LAWS *of* MOTION.

HAVING thus explained himſelf, Sir ISAAC propoſes to ſhow how we are to collect the true motions from their cauſes, effects, and apparent differences; and *vice verſa*, how, from the motions, either true or apparent, we may come to the knowledge of their cauſes and effects. In order to this, he lays down the following axioms or laws of motion.

I. EVERY BODY PERSEVERES IN ITS STATE OF REST, OR OF UNIFORM MOTION IN A RIGHT LINE, UNLESS IT IS COMPELLED TO CHANGE THAT STATE BY FORCES IMPRESSED UPON IT. —Sir Iſaac's proof of this axiom is as follows: "Projectiles perſevere in their motions, ſo far as they are not retarded by the reſiſtance of the air, or impelled downwards by the force of gravity. A top, whoſe parts, by their cohefion, are perpetually drawn aſide from rectilinear motions, does not ceaſe its rotation otherwiſe than as it is retarded by the air. The greater bodies of the planets and comets, meeting with leſs reſiſtance in more free ſpaces, preſerve their motions, both progreſſive and circular, for a much longer time."

Notwithſtanding this demonſtration, however, the axiom hath been violently diſputed. It hath been argued, that bodies continue in their ſtate of motion becauſe they are ſubjected to the continual impulſe of an inviſible and ſubtile fluid, which always pours in from behind, and of which all places are full. It hath been affirmed that motion is as natural to this fluid as reſt is to all other matter; that it is impoſſible we can know in what manner a body would be influenced by moving forces if it were entirely deſtitute of gravity. According to what we can obſerve, the momentum of a body, or its tendency to move, depends very much on its gravity. A heavy cannon ball will fly to a much greater diſtance than a light one, though both are actuated by an equal force. It is by no means clear, therefore, that a body totally deſtitute of gravity would have any proper momentum of its own; and if it had no momentum, it could not continue its motion for the

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ſmalleſt ſpace of time after the moving power was withdrawn. Some have imagined that matter was capable of beginning motion of itſelf, and conſequently that the axiom was falſe; becauſe we ſee plainly that matter in ſome caſes hath a tendency to change from a ſtate of motion to a ſtate of reſt, and from a ſtate of reſt to a ſtate of motion. A paper appeared on this ſubject in the firſt volume of the *Edinburgh Phyſical and Literary Eſſays*; but the hypotheſis never gained any ground.

2. THE ALTERATION OF MOTION IS EVER PROPORTIONAL TO THE MOTIVE FORCE IMPRESSED; AND IS MADE IN THE DIRECTION OF THE RIGHT LINE IN WHICH THAT FORCE IS IMPRESSED.—Thus, if any force generates a certain quantity of motion, a double force will generate a double quantity, whether that force be impreſſed all at once, or in ſucceſſive moments. To this law no objection of conſequence has ever been made. It is founded on this ſelf-evident truth that every effect muſt be proportional to its cauſe. Mr Young, who ſeems fond of detecting the errors of Newton, finds fault indeed with the expreſſions in which the law is ſtated; but he owns, that if thus expreſſed, *The alteration of motion is proportional to the actions or reſiſtances which produce it, and is in the direction in which the actions or reſiſtances are made*, it would be unexceptionable.

3. TO EVERY ACTION THERE ALWAYS IS OPPOSED AN EQUAL RE-ACTION: OR THE MUTUAL ACTION OF TWO BODIES UPON EACH OTHER ARE ALWAYS EQUAL, AND DIRECTED TO CONTRARY PARTS.—This axiom is alſo diſputed by many. In the above-mentioned paper in the phyſical Eſſays, the author endeavours to make a diſtinction between re-action and reſiſtance; and the ſame attempt has been made by Mr Young. "When an action generates no motion (ſays he), it is certain that its effects have been deſtroyed by a contrary and equal action. When an action generates two contrary and equal motions, it is alſo evident that mutual actions were exerted, equal and contrary to each other. All caſes where one of theſe conditions are not found, are exceptions to the truth of the law. If a finger preſſes againſt a ſtone, the ſtone if it does not yield to the preſſure, preſſes as much upon the finger: but if the ſtone yields, it re-acts leſs than the finger acts; and if it ſhould yield with all the momentum that the force of the preſſure ought to generate, which it would do if it were not impeded by friction, or a medium, it would not re-act at all. So if the ſtone drawn by a horſe, follows after the horſe, it does not re-act ſo much as the horſe acts; but only ſo much as the velocity of the ſtone is diminiſhed by friction, and it is the re-action of friction only, not of the ſtone. The ſtone does not re-act becauſe it does not act; it reſiſts, but reſiſtance is not action.

"In the loſs of motion from a ſtriking body, equal to the gain in the body ſtruck, there is a plain ſolution without requiring any re-action. The motion *loſt* is identically that which is *found* in the other body; this ſuppoſition accounts for the whole phenomenon in the moſt ſimple manner. If it be not admitted, but the ſolution by re-action is inſiſted upon, it will be incumbent on the party to account for the whole effect of communication of motion; otherwiſe he will lie under the imputation of rejecting a ſolution which is ſimple, obvious, and perfect; for one complex, unnatural, and incomplete. However this may be determined, it will be allowed, that the circumſtances mentioned afford no ground for the inference, that action and re-action are equal, ſince appearances may be explained in another way."

Thus, If there be a perfect reciprocity betwixt an impinging body and a body at reſt ſuſtaining its impulſe, may we not at our pleaſure conſider either body as the agent, and the other as the reſiſtant? Let a moving body, A, paſs from north to ſouth, an equal body B at reſt, which receives the ſtroke of A, act upon A from ſouth to north, and A reſiſt in a contrary direction, both inelaſtic: let the motion reciprocally communicated be called ſix. Then B at reſt communicates to A ſix degrees of motion towards the north, and receives ſix degrees towards the ſouth. B having no other motion than the ſix degrees it communicated, will, by its equal and contrary loſs and gain, remain in equilibrio. Let the original motion of A have been 12, then A having received a contrary action equal to ſix, ſix degrees of its motion will be deſtroyed or in equilibrio; conſequently, a motive force as ſix will remain to A towards the ſouth, and B will be in equilibrio, or at reſt. A will then endeavour to move with ſix degrees, or half its original motion, and B will remain at reſt as before. A and B being equal maſſes, by the laws of communication three degrees of motion will be communicated to B, or A with its ſix degrees will act with three, and B will re-act alſo with three, B then will act on A from ſouth to north equal to three, while it is acted upon or reſiſted by A from north to ſouth, equal alſo to three, and B will remain at reſt as before; A will alſo have its ſix degrees of motion reduced to one half by the contrary action of B, and only 3 degrees of motion will remain to A, with which it will yet endeavour to move; and finding B ſtill at reſt, the ſame proceſs will be repeated till the whole motion of A is reduced to an infinitely ſmall quantity, B all the while remaining at reſt, and there will be no communication of motion from A to B, which is contrary to experience.

Let a body, A, whoſe maſs is 13, at reſt, be impinged upon firſt by B, having a maſs as 12, and a velocity as 4, making a momentum of 48; and 2dly by C, whoſe maſs is ſix, and velocity 8, making a momentum of 48 equal to B, the three bodies being inelaſtic. In the firſt caſe, A will become poſſeſſed of a momentum of 24, and 24 will remain to B; and, in the 2d caſe, A will become poſſeſſed of a momentum of 32, and 16 will remain to C, both bodies moving with equal velocities after the ſhock, in both caſes, by the laws of percuſſion. It is required to know, if in both caſes A reſiſts equally, and if B and C act equally? If the actions and reſiſtances are equal, how does A in the one caſe deſtroy 24 parts of B's motion, and in the other caſe 32 parts of C's motion, by an equal reſiſtance? And how does B communicate in one caſe 24 degrees of motion, and C 32, by equal actions? If the actions and reſiſtances are unequal,

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unequal, it is aſked how the ſame maſs can reſiſt differently to bodies impinging upon it with equal momenta, and how bodies poſſeſſed of equal momenta can exert different actions, it being admitted that bodies reſiſt proportional to their maſſes, and that their power of overcoming reſiſtance is proportional to their momenta?—It is incumbent on thoſe who maintain the doctrine of univerſal re-action, to free it from theſe difficulties and apparent contradictions.

Others grant that Sir Iſaac's axiom is very true with reſpect to terreſtrial ſubſtances; but they affirm, that, in theſe, both action and re-action are the effects of gravity. Subſtances void of gravity would have no momentum; and without this they could not act; they would be moved by the leaſt force, and therefore could not reſiſt or re-act. If, therefore, there is any fluid which is the cauſe of gravity, though ſuch fluid could act upon terreſtrial ſubſtances, yet theſe could not re-act upon it, becauſe they have no force of their own, but depend entirely upon it for their momentum. In this manner, ſay they, we may conceive that the planets circulate, and all the operations of nature are carried on by means of a ſubtile fluid; which being perfectly active, and the reſt of matter altogether paſſive, there is neither reſiſtance nor loſs of motion. See MOTION, § 5—7.

From the preceding axiom Sir Iſaac draws the following corollaries.

1. A body by two forces conjoined will deſcribe the diagonal of a parallelogram in the ſame time that it would deſcribe the ſides by thoſe forces apart.

2. Hence we may explain the compoſition of any one direct force out of any two oblique ones, viz. by making the two oblique forces the ſides of a parallelogram, and the direct one the diagonal.

3. The quantity of motion, which is collected by taking the ſum of the motions directed towards the ſame parts, and the difference of thoſe that are directed to contrary parts, ſuffers no change from the action of bodies among themſelves; becauſe the motion which one body loſes is communicated to another; and if we ſuppoſe friction and the reſiſtance of the air to be abſent, the motion of a number of bodies which mutually impelled one another would be perpetual, and its quantity always equal.

4. The common centre of gravity of two or more bodies does not alter its ſtate of motion or reſt by the actions of the bodies among themſelves; and therefore the common centre of gravity of all bodies acting upon each other (excluding outward actions and impediments), is either at reſt, or moves uniformly in a right line.

5. The motions of bodies included in a given ſpace are the ſame among themſelves, whether that ſpace is at reſt, or moves uniformly forward in a right line without any circular motion. The truth of this is evidently ſhown by the experiment of a ſhip, where all motions happen after the ſame manner, whether the ſhip is at reſt, or proceeds uniformly forward in a ſtraight line.

6. If bodies, any how moved among themſelves, are urged in the direction of parallel lines by equal accelerative forces, they will all continue to move among themſelves, after the ſame manner as if they had been urged by no ſuch forces.

The whole of the mathematical part of the Newtonian philoſophy depends on the following lemmas; of which the firſt is the principal.

LEM. I. Quantities, and the ratios of quantities, which in any finite time converge continually to equality, and before that time approach nearer the one to the other than by any given difference, become ultimately equal. If you deny it; ſuppoſe them to be ultimately unequal, and let D be their ultimate difference. Therefore they cannot approach nearer to equality than by that given difference D; which is againſt the ſuppoſition.

Concerning the meaning of this lemma philoſophers are not agreed; and unhappily it is the very fundamental poſition on which the whole of the ſyſtem reſts. Many objections have been raiſed to it by people who ſuppoſed themſelves capable of underſtanding it. They ſay, that it is impoſſible we can come to an end of any infinite ſeries, and therefore that the word *ultimate* can in this caſe have no meaning. In ſome caſes the lemma is evidently falſe. Thus, ſuppoſe there are two quantities of matter, A and B, the one containing half a pound, and the other a third part of one. Let both be continually divided by 2; and though their ratio, or the proportion of the one to the other, doth not vary, yet the difference between them perpetually becomes leſs, as well as the quantities themſelves, until both the difference and quantities themſelves become leſs than any aſſignable quantity; yet the difference will never totally vaniſh, nor the quantities become equal, as is evident from the two following ſeries.

$$\frac{1}{2}\ \frac{1}{4}\ \frac{1}{8}\ \frac{1}{16}\ \frac{1}{32}\ \frac{1}{64}\ \frac{1}{128}\ \frac{1}{256}\ \frac{1}{512}\ \frac{1}{1024}, \text{ \&c.}$$

$$\frac{1}{3}\ \frac{1}{6}\ \frac{1}{12}\ \frac{1}{24}\ \frac{1}{48}\ \frac{1}{96}\ \frac{1}{192}\ \frac{1}{384}\ \frac{1}{768}\ \frac{1}{1536}, \text{ \&c.}$$

$$\text{Diff. } \frac{1}{6}\ \frac{1}{12}\ \frac{1}{24}\ \frac{1}{48}\ \frac{1}{96}\ \frac{1}{192}\ \frac{1}{384}\ \frac{1}{768}\ \frac{1}{1536}\ \frac{1}{3072}, \text{ \&c.}$$

Thus we ſee, that though the difference is continually diminiſhing, and that in a very large proportion, there is no hope of its vaniſhing, or the quantities becoming equal. In like manner, let us take the proportions or ratios of quantities, and we ſhall be equally unſucceſsful. Suppoſe two quantities of matter, one containing 8 and the other 10 ponnds: theſe quantities already have to each other the ratio of 8 to 10, or of 4 to 5; but let us add 2 continually to each of them, and though the ratios continually come nearer to that of equality, it is in vain to hope for a perfect coincidence. Thus,

$$8\ \ 10\ \ 12\ \ 14\ \ 16\ \ 18\ \ 20\ \ 22\ \ 24, \text{ \&c.}$$

$$10\ \ 12\ \ 14\ \ 16\ \ 18\ \ 20\ \ 22\ \ 24\ \ 26, \text{ \&c.}$$

$$\text{Ratio } \frac{4}{5}\ \frac{5}{6}\ \frac{6}{7}\ \frac{7}{8}\ \frac{8}{9}\ \frac{9}{10}\ \frac{10}{11}\ \frac{11}{12}\ \frac{12}{13}, \text{ \&c.}$$

For this and his other lemmas Sir Iſaac makes the following apology. "Theſe lemmas are premiſed, to avoid the tediouſneſs of deducing perplexed demonſtrations *ad abſurdum*, according to the method of ancient geometers. For demonſtrations are more contracted by the method of indiviſibles; but becauſe the hypotheſis of indiviſibles

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viſibles ſeems ſomewhat harſh, and therefore that method is reckoned leſs geometrical, I choſe rather to reduce the demonſtrations of the following propoſitions to the firſt and laſt ſums and ratios of naſcent and evaneſcent quantities, that is, to the limits of thoſe ſums and ratios; and ſo to premiſe, as ſhort as I could, the demonſtrations of thoſe limits. For hereby the ſame thing is performed as by the method of indiviſibles; and now thoſe principles being demonſtrated, we may uſe them with more ſafety. Therefore, if hereafter I ſhould happen to conſider quantities as made up of particles, or ſhould uſe little curve lines for right ones, I would not be underſtood to mean indiviſibles, but evaneſcent diviſible quantities; not the ſums and ratios of determinate parts, but always the limits of ſums and ratios; and that the force of ſuch demonſtrations always depends on the method laid down in the foregoing lemmas.

"Perhaps it may be objected, that there is no ultimate proportion of evaneſcent quantities, becauſe the proportion before the quantities have vaniſhed, is not the ultimate, and, when they are vaniſhed, is none. But by the ſame argument it may be alleged, that a body arriving at a certain place, and there ſtopping, has no ultimate velocity; becauſe the velocity before the body comes to the place is not its ultimate velocity; when it is arrived, it has none. But the anſwer is eaſy: for by the ultimate velocity is meant that with which the body is moved, neither before it arrives at its place and the motion ceaſes, nor after, but at the very inſtant it arrives; that is, that velocity with which the body arrives at its laſt place, and with which the motion ceaſes. And in like manner, by the ultimate ratio of evaneſcent quantities is to be underſtood the ratio of the quantities, not before they vaniſh, nor afterwards, but with which they vaniſh. In like manner, the firſt ratio of naſcent quantities is that with which they begin to be. And the firſt or laſt ſum is that with which they begin and ceaſe to be (or to be augmented and diminiſhed). There is a limit which the velocity at the end of the motion may attain, but not exceed; and this is the ultimate velocity. And there is the like limit in all quantities and proportions that begin and ceaſe to be. And, ſince ſuch limits are certain and definite, to determine the ſame is a problem ſtrictly geometrical. But whatever is geometrical we may be allowed to make uſe of in determining and demonſtrating any other thing that is likewiſe geometrical.

"It may alſo be objected, that if the ultimate ratios of evaneſcent quantities are given, their ultimate magnitudes will be alſo given; and ſo all quantities will conſiſt of indiviſibles, which is contrary to what Euclid has demonſtrated concerning incommenſurables, in the 10th book of his elements. But this objection is founded on a falſe ſuppoſition. For thoſe ultimate ratios with which quantities vaniſh are not truly the ratios of ultimate quantities, but limits towards which the ratios of quantities decreaſing continually approach."

LEM. II. If in any figure A *a c* E (*Pl.* CCXLVI. N° 1.) terminated by the right line A*a*, AE, and the curve *a c* E, there be inſcribed any number of parallelograms A*b*, B*c*, C*d*, &c. comprehended under equal baſes AB, BC, CD, &c. and the ſides B*b*, C*c*, D*d*, &c. parallel to one ſide A*a* of the figure; and the parallelograms *a* K *b l*, *b* L *c m*, *c* M *d n*, &c. are completed. Then if the breadth of theſe parallelograms be ſuppoſed to be diminiſhed, and their number augmented *in infinitum*; the ultimate ratios which the inſcribed figure AK *b* L *c* M *d* D, the circumſcribed figure A *a l b m c n d o* E, and curvilinear figure A *a b c d* E, will have to one another, are ratios of equality.—For the difference of the inſcribed and circumſcribed figures is the ſum of the parallelograms K *l*, L *m*, M *n*, D *o*; that is, (from the equality of all their baſes,) the rectangle under one of their baſes K *b*, and the ſum of their altitudes A *a*, that is, the rectangle AB *l a*. But this rectangle, becauſe its breadth AB is ſuppoſed diminiſhed *in infinitum*, becomes leſs than any given ſpace. And therefore, by lem. 1. the figures inſcribed and circumſcribed become ultimately equal the one to the other; and much more will the intermediate curvilinear figure be ultimately equal to either.

LEM. III. The ſame ultimate ratios are alſo ratios of equality, when the breadths AB, BC, CD, &c. of the parallelograms are unequal, and are all diminiſhed *in infinitum*.—The demonſtration of this differs but little from that of the former.

In his ſucceeding lemmas, Sir Iſaac goes on to prove, in a manner ſimilar to the above, that the ultimate ratios of the ſine, chord, and tangent of arcs infinitely diminiſhed, are ratios of equality; and therefore, that in all our reaſonings about theſe we may ſafely uſe the one for the other:—that the ultimate form of evaneſcent triangles made by the arc, chord, and tangent, is that of ſimilitude, and their ultimate ratio is that of equality; and hence, in reaſonings about ultimate ratios, we may ſafely uſe theſe triangles for each other, whether made with the ſine, the arc, or the tangent.—He then ſhows ſome properties of the ordinates of curvilinear figures; and proves that the ſpaces which a body deſcribes by any finite force urging it, whether that force is determined and immutable, or is continually augmented or continually diminiſhed, are, in the very beginning of the motion, one to the other in the duplicate ratio of the powers. And, laſtly, having added ſome demonſtrations concerning the evaneſcence of angles of contact, he proceeds to lay down the mathematical part of his ſyſtem, and which depends on the following theorems:

THEOR. I. The areas which revolving bodies deſcribe, by radii drawn to an immoveable centre of force, lie in the ſame immoveable planes, and are proportional to the times in which they are deſcribed.—For, ſuppoſe the time to be divided into equal parts, and in the firſt part of that time, let the body by its innate force deſcribe the right line AB (N° 2.); in the ſecond part of that time, the ſame would, by law 1. if not hindered, proceed directly to *c* along the line B *c*=AB; ſo that by the radii AS, BS, *c* S, drawn to the centre, the equal areas ASB, BS *c*, would be deſcribed. But, when the body is arrived at B, ſuppoſe the centripetal force acts at once with a great impulſe, and, turning aſide the body from the right line B *c*, compels it afterwards to continue its motion along the right line BC. Draw *c* C parallel to BS,

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BS, meeting BC in C; and at the end of the ſecond part of the time, the body, by cor 1. of the laws, will be found in C, in the ſame plane with the triangle ASB. Join SC; and becauſe SB and *c*C are parallel, the triangle SBC will be equal to the triangle SCD, and therefore alſo to the triangle SAB. By the like argument, if the centripetal force acts ſucceſſively in C, D, E, &c. and makes the body in each ſingle particle of time to deſcribe the right lines CD, DE, EF, &c. they will all lie in the ſame plane; and the triangle SCD will be equal to the triangle SBC, and SDE to SCD, and SEF to SDE. And therefore, in equal times, equal areas are deſcribed in one immoveable plane; and by compoſition, any ſums SADS, SAFS, of thoſe areas are, one to the other, as the times in which they are deſcribed. Now, let the number of thoſe triangles be augmented, and their ſize diminiſhed *in infinitum*; and then, by the preceding lemmas, their ultimate perimeter ADF will be a curve line: and therefore the centripetal force by which the body is perpetually drawn back from the tangent of this curve will act continually; and any deſcribed areas SADS, SAFS, which are always proportional to the times of deſcription, will, in this caſe alſo, be proportional to thoſe times Q. E. D.

COR. 1. The velocity of a body attracted towards an immoveable centre, in ſpaces void of reſiſtances, is reciprocally as the perpendicular let fall from that centre on the right line which touches the orbit. For the velocities in theſe places A, B, C, D, E, are as the baſes AB, BC, DE, EF, of equal triangles; and theſe baſes are reciprocally as the perpendiculars let fall upon them.

COR 2. If the chords AB, BC, of two arcs ſucceſſively deſcribed in equal times by the ſame body, in ſpaces void of reſiſtance, are completed into a parallelogram ABCV, and the diagonal BV of this parallelogram, in the poſition which it ultimately acquires when thoſe arcs are diminiſhed *in infinitum*, is produced both ways, it will paſs through the centre of force.

COR. 3. If the chords AB, BC, and DE, EF, of arcs deſcribed in equal times, in ſpaces void of reſiſtance, are completed into the parallelograms ABCV, DEFZ, the forces in B and E are one to the other in the ultimate ratio of the diagonals BV, EZ, when thoſe arcs are diminiſhed *in infinitum*. For the motions BC and EF of the body (by cor. 1. of the laws), are compounded of the motions B*c*, BV and E*f*, EZ; but BV and EZ, which are equal to C*c* and F*f*, in the demonſtration of this propoſition, were generated by the impulſes of the centripetal force in B and E, and are therefore proportional to thoſe impulſes.

COR. 4. The forces by which bodies, in ſpaces void of reſiſtance, are drawn back from rectilinear motions, and turned into curvilinear orbits, are one to another as the verſed fines of arcs deſcribed in equal times; which verſed fines tend to the centre of force, and biſect the chords when theſe arcs are diminiſhed to infinity. For ſuch verſed fines are the halves of the diagonals mentioned in cor. 3.

COR. 5. And therefore thoſe forces are to the force of gravity, as the ſaid verſed fines to the verſed fines perpendicular to the horizon of thoſe parabolic arcs which projectiles deſcribe in the ſame time.

COR. 6. And the ſame things do all hold good (by cor. 5. of the laws) when the planes in which the bodies are moved, together with the centres of force, which are placed in thoſe planes, are not at reſt, but move uniformly forward in right lines.

THEOR. II. Every body that moves in any curve line deſcribed in a plane, and, by a radius drawn to a point either immoveable or moving forward with an unform rectilinear motion, deſcribes about that point areas proportional to the times, is urged by the centripetal force directed to that point.

CASE I. For every body that moves in a curve line is (by law 1.) turned aſide from its rectilinear courſe by the action of ſome force that impels it; and that force by which the body is turned off from its rectilinear courſe, and made to deſcribe in equal times the leaſt equal triangles SAB, SBC, SCD, &c. about the immoveable point S, (by Prop. 40. E. 1. and law 2.) acts in the place B according to the direction of a line parallel to C; that is, in the direction of the line BS; and in the place C according to the direction of a line parallel to *d*D, that is, in the direction of the line CS, &c.; and therefore acts always in the direction of lines tending to the immoveable point S. Q. E. D.

CASE II. And (by cor. 5. of the laws) it is indifferent whether the ſuperficies in which a body deſcribes a curvilinear figure be quieſcent, or moves together with the body, the figure deſcribed, and its point S, uniformly forward in right lines.

COR. 1. In non-reſiſting ſpaces of mediums, if the areas are not proportional to the times, the forces are not directed to the point in which the radii meet; but deviate therefrom *in conſequentia*, or towards the parts to which the motion is directed, if the deſcription of the areas is accelerated; but *in antecedentia* if retarded.

COR. 2. And even in reſiſting mediums, if the deſcription of the areas is accelerated, the directions of the forces deviate from the point in which the radii meet, towards the parts to which the motion tends.

SCHOLIUM. A body may be urged by a centripetal force compounded of ſeveral forces. In which caſe the meaning of the propoſition is, that the force which reſults out of all tends to the point S. But if any force acts perpetually in the direction of lines perpendicular to the deſcribed ſurface, this force will make the body to deviate from the plane of its motion, but will neither augment nor diminiſh the quantity of the deſcribed ſurface; and is therefore not to be neglected in the compoſition of forces.

THEOR. III. Every body that, by a radius drawn to the centre of another body, howſoever moved, deſcribes areas about that centre proportional to the times, is urged by a force compounded of the centripetal forces tending to that other body, and of all the accelerative force by which the other body is impelled.—The demonſtration of this is a natural conſequence of the theorem immediately preceding.

Hence, if the one body L, by a radius drawn to the other body T, deſcribes areas proportional to the

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the times, and from the whole force by which the firſt body L is urged (whether that force is ſimple, or, according to cor. 2. of the laws, compounded of ſeveral forces), we ſubduct that whole accelerative force by which the other body is urged; the whole remaining force by which the firſt body is urged will tend to the other body T, as its centre. And *vice verſa*, if the remaining force tends nearly to the other body T, thoſe areas will be nearly proportional to the times.

If the body L, by a radius drawn to the other body T, deſcribes areas, which compared with the times are very unequal, and that other body T be either at reſt, or moves uniformly forward in a right line, the action of the centripetal force tending to that other body T is either none at all, or it is mixed and combined with very powerful actions of other forces: and the whole force compounded of them all, if they are many, is directed to another (immoveable or moveable) centre. The ſame thing obtains when the other body is actuated by any other motion whatever; provided that centripetal force is taken which remains after ſubducting that whole force acting upon that other body T.

SCHOLIUM. Becauſe the equable deſcription of areas indicates that a centre is reſpected by that force with which the body is moſt affected, and by which it is drawn back from its rectilinear motion, and retained in its orbit, we may always be allowed to uſe the equable deſcription of areas as an indication of a centre about which all circular motion is performed in free ſpaces.

THEOR. IV. The centripetal forces of bodies which by equable motions deſcribe different circles, tend to the centres of the ſame circles; and are one to the other as the ſquares of the arcs deſcribed in equal times applied to the radii of circles.—For theſe forces tend to the centres of the circles, (by theor 2. and cor. 2. theor. 1.) and are to one another as the verſed ſines of the leaſt arcs deſcribed in equal times, (by cor. 4. theor 1.) that is as the ſquares of the ſame arcs applied to the diameters of the circles, by one of the lemmas: and therefore ſince thoſe arcs are as arcs deſcribed in any equal times, and the diameters are as the radii, the forces will be as the ſquares of any arcs deſcribed in the ſame time, applied to the radii of the circles. Q. E. D.

COR. 1. Therefore, ſince thoſe arcs are as the velocities of the bodies, the centripetal forces are in a ratio compounded of the duplicate ratio of the velocities directly, and of the ſimple ratio of the radii inverſely.

COR. 2. And ſince the periodic times are in a ratio compounded of the ratio of the radii directly, and the ratio of the velocities inverſely; the centripetal forces are in a ratio compounded of the ratio of the radii directly, and the duplicate ratio of the periodic times inverſely.

COR. 3. Whence, if the periodic times are equal, and the velocities therefore as the radii, the centripetal forces will be alſo as the radii; and the contrary.

COR. 4. If the periodic times and the velocities are both in the ſubduplicate ratio of the radii, the centripetal forces will be equal among themſelves; and the contrary.

COR. 5. If the periodic times are as the radii, and therefore the velocities equal, the centripetal forces will be reciprocally as the radii; and the contrary.

COR. 6. If the periodic times are in the ſeſquiplicate ratio of the radii, and therefore the velocities reciprocally in the ſubduplicate ratio of the radii, the centripetal forces will be in the duplicate ratio of the radii inverſe; and the contrary.

COR. 7. And univerſally, if the periodic time is as any power Rn of the radius R, and therefore the velocity reciprocally as the power Rn—1 of the radius, the centripetal force will be reciprocally as the power R2n—2 of the radius; and the contrary.

COR. 8. The ſame things all hold concerning the times, the velocities, and forces, by which bodies deſcribe the ſimilar parts of any ſimilar figures, that have their centres in a ſimilar poſition within thoſe figures, as appears by applying the demonſtrations of the preceding caſes to thoſe. And the application is eaſy, by only ſubſtituting the equable deſcription of areas in the place of equable motion, and uſing the diſtances of the bodies from the centres inſtead of the radii.

COR. 9. From the ſame demonſtration it likewiſe follows, that the arc which a body, uniformly revolving in a circle by means of a given centripetal force, deſcribes in any time, is a mean proportional between the diameter of the circle and the ſpace which the ſame body, falling by the ſame given force, would deſcend through in the ſame given time.

"By means of the preceding propoſition and its corollaries (ſays Sir ISAAC), we may diſcover the proportion of a centripetal force to any other known force, ſuch as that of gravity. For if a body by means of its gravity revolves in a circle concentric to the earth, this gravity is the centripetal force of that body. But from the deſcent of heavy bodies, the time of one entire revolution, as well as the arc deſcribed in any given time, is given (by cor. 9. of this theorem). And by ſuch propoſitions Mr HUYGENS, in his excellent book *De Horologio Oſcillatorio*, has compared the force of gravity with the centrifugal forces of revolving bodies.

The preceding propoſition may alſo be demonſtrated in the following manner:—In any circle ſuppoſe a polygon to be inſcribed of any number of ſides. And if a body, moved with a given velocity along the ſides of the polygon, is reflected from the circle at the ſeveral angular points; the force with which, at every reflection it ſtrikes the circle, will be as its velocity: and therefore the ſum of the forces, in a given time, will be as that velocity and the number of reflections conjunctly; that is, (if the ſpecies of the polygon be given), as the length deſcribed in that given time, and increaſed or diminiſhed in the ratio of the ſame length to the radius of the circle; that is, as the ſquare of that length applied to the radius; and therefore, if the polygon, by having its ſides diminiſhed *in infinitum*, coincides with the circle, as the ſquare of the arc deſcribed in a given time applied to the radius. This is the centrifugal force, with which the body impels the circle; and to which the contrary force, wherewith the circle continually repels the body towards the centre, is equal.

On

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On these principles hangs the whole of Sir Isaac Newton's mathematical philosophy. He now shows how to find the centre to which the forces impelling any body are directed, having the velocity of the body given: and finds the centrifugal force to be always as the versed sine of the nascent arc directly, and as the square of the time inversely; or directly as the square of the velocity, and inversely as the chord of the nascent arc. From these premises he deduces the method of finding the centripetal force directed to any given point when the body revolves in a circle; and this whether the central point is near or at an immense distance; so that all the lines drawn from it may be taken for parallels. The same thing he shows with regard to bodies revolving in spirals, ellipses, hyperbolas, or parabolas.—Having the figures of the orbits given, he shows also how to find the velocities and moving powers; and, in short, solves all the most difficult problems relating to the celestial bodies with an astonishing degree of mathematical skill. These problems and demonstrations are all contained in the first book of the *Principia*; to which we must refer those who wish for farther information.

SECT. VI. RULES *for* PHILOSOPHICAL REASONING.

IN his 2d book Sir ISAAC treats of the properties of fluids, and their powers of resistance; and lays down such principles as entirely overthrow the doctrine of DES CARTES's vortices, which was the fashionable system in his time. In the 3d book, he begins particularly to treat of the natural phenomena, and apply them to the mathematical principles formerly demonstrated; and, as a necessary preliminary to this part, he lays down the following rules for reasoning in natural philosophy:

1. We are to admit no more causes of natural things than such as are both true and sufficient to explain their natural appearances.

2. Therefore to the same natural effects we must always assign, as far as possible, the same causes.

3. The qualities of bodies which admit neither intension nor remission of degrees, and which are found to belong to all bodies within the reach of our experiments, are to be esteemed the universal qualities of all bodies whatsoever.

4. IN EXPERIMENTAL PHILOSOPHY, we are to look upon propositions collected by general induction from phenomena as accurately or very nearly true, notwithstanding any contrary hypotheses that may be imagined, till such time as other phenomena occur, by which they may either be made more accurate, or liable to exceptions.

The phenomena first considered, are, 1. That the satellites of Jupiter, by radii drawn to the centre of their primary, describe areas proportional to the times of the description; and that their periodic times, the fixed stars being at rest, are in the sesquiplicate ratio of their distances from its centre. 2. The same thing is likewise observed of the phenomena of Saturn. 3. The five primary planets, Mercury, Venus, Mars, Jupiter, and Saturn, with their several orbits, encompass the sun. 4. The fixed stars being supposed at rest, the periodic times of the five primary planets, and of the earth about the sun, are in the sesquiplicate proportion of their mean distances from the sun. 5. The primary planets, by radii drawn to the earth, describe areas no way proportionable to the times: but the areas which they describe by radii drawn to the sun are proportional to the times of description. 6. The moon, by a radius drawn to the centre of the earth, describes an area proportional to the time of description. All these phenomena are undeniable from astronomical observations, and are explained at large under the article ASTRONOMY. The mathematical demonstrations are next applied by Sir Isaac Newton in the following propositions:

PROP. I. The forces by which the satellites of Jupiter are continually drawn off from rectilinear motions, and retained in their proper orbits, tend to the centre of that planet; and are reciprocally as the squares of the distances of those satellites from that centre. The former part of this proposition appears from theor. 2. or 3. and the latter from cor. 6. of theor. 5. and the same thing we are to understand of the satellites of Saturn.

PROP. II. The forces by which the primary planets are continually drawn off from rectilinear motions, and retained in their proper orbits, tend to the sun; and are reciprocally as the squares of the distances from the sun's centre. The former part of this proposition is manifest from phenomenon 5. just mentioned, and from theor. 2.; the latter from the phenomenon 4. and cor. 6. of theor 4. But this part of the proposition is with great accuracy deducible from the quiescence of the aphelion points. For a very small aberration from the reciprocal duplicate proportion would produce a motion of the apsides, sensible in every single revolution, and in many of them enormously great.

PROP. III. The force by which the moon is retained in its orbit, tends towards the earth; and is reciprocally as the square of the distance of its place from the centre of the earth. The former part of this proposition is evident from phenom. 5. and theor. 2. the latter from phenom. 6. and theor. 2. or 3. It is also evident from the very slow motion of the moon's apogee; which, in every single revolution, amounting but to 3° 3′ *in consequentia*, may be neglected: and this more fully appears from the next proposition.

PROP. IV. The moon gravitates towards the earth, and by the force of gravity is continually drawn off from a rectilinear motion, and retained in its orbit.—The mean distance of the moon from the earth in the syzigies in semidiameters of the latter, is about 60½. Let us assume the mean distance of 60 semidiameters in the syzigies; and suppose one revolution of the moon in respect of the fixed stars to be completed in 27d. 7h. 43′, as astronomers have determined; and the circumference of the earth to amount to 123,249,600 Paris feet. Now, if we imagine the moon, deprived of all her motion, to be let go, so as to descend towards the earth with the impulse of all that force by which it is retained in its orbit, it will, in the space of one minute of time, describe in its fall 15 ¼ Paris feet. For the versed sine of that arc which the moon, in the space of one minute of time, describes by its mean motion at the

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distance of 60 semidiameters of the earth, is nearly 15 $\frac{1}{12}$ Paris feet; or, more accurately, 15 feet 1 inch and one line $\frac{4}{9}$. Wherefore, since that force, in approaching to the earth, increases in the reciprocal duplicate proportion of the distance; and, upon that account, at the surface of the earth is 60×60 times greater than at the moon; a body in our regions, falling with that force ought, in the space of one minute of time, to describe $60 \times 60 \times 15\frac{1}{12}$ Paris feet; and in the space of one second of time to describe 15 $\frac{1}{12}$ of those feet; or, more accurately, 15 feet 1 inch, 1 line $\frac{4}{9}$. And with this very force we actually find that bodies here on earth do really descend.—For a pendulum oscillating seconds in the latitude of Paris, will be three Paris feet and $8\frac{4}{9}$ lines in length, as Mr HUYGENS has observed. And the space which a heavy body describes by falling one second of time, is to half the length of the pendulum in the duplicate ratio of the circumference of the circle to its diameter; and is therefore 15 Paris feet, 1 inch, 1 line $\frac{7}{9}$. And therefore the force by which the moon is retained in its orbit, becomes, at the very surface of the earth, equal to the force of gravity which we observe in heavy bodies there. And therefore (by rules 1, and 2.) the force by which the moon is retained in its orbit is that very same force which we commonly call GRAVITY. For were gravity another force different from that, then bodies descending to the earth with the joint impulse of both forces, would fall with a double velocity, and, in the space of one second of time, would describe $30\frac{1}{9}$ Paris feet; altogether against experience.

The demonstration of this proposition may be more diffusely explained after the following manner. Suppose several moons to revolve about the earth, as in the system of Jupiter or Saturn, the periodic times of those moons would (by the argument of induction) observe the same law which Kepler found to obtain among the planets; and therefore their centripetal forces would be reciprocally as the squares of the distances from the centre of the earth, by Prop. I. Now, if the lowest of these were very small, and were so near the earth as almost to touch the tops of the highest mountains, the centripetal force thereof, retaining it in its orbit, would be very nearly equal to the weights of any terrestrial bodies that should be found upon the tops of these mountains; as may be known from the foregoing calculation. Therefore, if the same little moon should be deserted by its centrifugal force that carries it through its orbit, it would descend to the earth; and that with the same velocity as heavy bodies do actually descend with upon the tops of those very mountains, because of the equality of forces that obliges them both to descend. And if the force by which that lowest moon would descend were different from that of gravity, and if that moon were to gravitate towards the earth, as we find terrestrial bodies do on the tops of mountains, it would then descend with twice the velocity, as being impelled by both these forces conspiring together. Therefore, since both these forces, that is, the gravity of heavy bodies, and the centripetal forces of the moons, respect the centre of the earth, and are similar and equal between themselves, they will (by rules 1, and 2.) have the same cause. And therefore the force which retains the moon in its orbit, is that very force which we commonly call *gravity*; because otherwise, this little moon at the top of a mountain must either be without gravity, or fall twice as swiftly as heavy bodies use to do.

Having thus demonstrated that the moon is retained in its orbit by its gravitation towards the earth, it is easy to apply the same demonstration to the motions of the other secondary planets, and of the primary planets round the sun, and thus to show that gravitation prevails throughout the whole creation. After which Sir Isaac proceeds to show from the same principles, that the heavenly bodies gravitate towards each other, and contain different quantities of matter, or have different densities in proportion to their bulks.

PROP. V. All bodies gravitate towards every planet; and the weight of bodies towards the same planet, at equal distances from its centre are proportional to the quantities of matter they contain.

It has been confirmed by many experiments, that all sorts of heavy bodies (allowance being made for the inequality of retardation by some small resistance of the air) descend to the earth from equal heights in equal times; and that equality of times we may distinguish to a great accuracy by the help of pendulums. Sir Isaac Newton tried the thing in gold, silver, lead, glass, sand, common salt, wood, water, and wheat. He provided two wooden boxes, round and equal, filled the one with wood, and suspended an equal weight of gold in the centre of oscillation of the other. The boxes hanging by equal threads of 11 feet, made a couple of pendulums, perfectly equal in weight and figure, and equally receiving the resistance of the air. And placing the one by the other, he observed them to play together forwards and backwards, for a long time, with equal vibrations. And therefore the quantity of matter in the gold was to the quantity of matter in the wood, as the action of the motive force (or VIS MOTRIX) upon all the gold to the action of the same upon all the wood; that is, as the weight of the one to the weight of the other. And the like happened in the other bodies.

By these experiments, in bodies of the same weight, he could manifestly have discovered a difference of matter less than the thousandth part of the whole, had any such been. But, without all doubt, the nature of gravity towards the planets, is the same as towards the earth. For, should we imagine our terrestrial bodies removed to the orb of the moon, and there, together with the moon, deprived of all motion, to be let go, so as to fall together towards the earth; it is certain from what we have demonstrated before, that, in equal times, they would describe equal spaces with the moon, and of consequence are to the moon, in quantity of matter as their weights to its weight. Since the satellites of Jupiter perform their revolutions in times which observe the sesquiplicate proportion of their distances from Jupiter's centre, their accelerative gravities towards Jupiter will be reciprocally as the squares of their distances from Jupiter's centre; that is, equal at equal distances. And therefore, these satellites,

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fatellites, if ſuppoſed to fall towards Jupiter from equal heights, would deſcribe equal ſpaces in equal times, in like manner as heavy bodies do on our earth. And by the ſame argument, if the circumſolar planets were ſuppoſed to be let fall at equal diſtances from the ſun, they would in their deſcent towards the ſun, deſcribe equal ſpaces in equal times. But forces, which equally accelerate unequal bodies, muſt be as thoſe bodies: that is to ſay, the weights of the planets towards the ſun muſt be as their quantities of matter.

Further, that the weights of Jupiter and of his ſatellites towards the ſun are proportional to the ſeveral quantities of their matter, appears from the exceeding regular motions of the ſatellites. For if ſome of thoſe bodies were more ſtrongly attracted to the ſun in proportion to their quantity of matter than others, the motions of the ſatellites would be diſturbed by that inequality of attraction. If, at equal diſtances from the ſun, any ſatellite, in proportion to the quantity of its matter, did gravitate towards the ſun, with a force greater than Jupiter in proportion to his, according to any given proportion, ſuppoſe of *d* to *e*; then the diſtance between the centres of the ſun and of the ſatellite's orbit would be always greater than the diſtance between the centres of the ſun and of Jupiter nearly in the ſubduplicate of that proportion. And if the ſatellite gravitated towards the ſun with a force leſs in the proportion of *e* to *d*, the diſtance of the centre of the ſatellite's orb from the ſun would be leſs than the diſtance of the centre of Jupiter's from the ſun in the ſubduplicate of the ſame proportion. Therefore, if at equal diſtances from the ſun, the accelerative gravity of any ſatellite towards the ſun were greater or leſs than the accelerating gravity of Jupiter towards the ſun but by one 100oth part of the whole gravity; the diſtance of the centre of the ſatellite's orbit from the ſun would be greater or leſs than the diſtance of Jupiter from the ſun by one 200oth part of the whole diſtance; that is, by a fifth part of the diſtance of the utmoſt ſatellite from the centre of Jupiter; an eccentricity of the orbit which would be very ſenſible. But the orbits of the ſatellites are concentric to Jupiter; therefore the accelerative gravities of Jupiter, and of all ſatellites, towards the ſun, are equal among themſelves. And by the ſame argument, the weight of Saturn and of his ſatellites towards the ſun, at equal diſtances from the ſun, are as their ſeveral quantities of matter; and the weights of the moon and of the earth towards the ſun, are either none, or accurately proportional to the maſſes of matter which they contain.

But further, the weights of all the parts of every planet towards any other planet are one to another as the matter in the ſeveral parts. For if ſome parts gravitated more, others leſs, than in proportion to the quantity of their matter; then the whole planet, according to the ſort of parts with which it moſt abounds, would gravitate more or leſs than in proportion to the quantity of matter in the whole. Nor is it of any moment whether theſe parts are external or internal. For if, as an inſtance, we ſhould imagine the terreſtrial bodies with us to be raiſed up to the orb of the moon, to be there compared with its body; if the weights of ſuch bodies were to the weights of the external parts of the moon as the quantities of matter in the one and in the other reſpectively, but to the weights of the internal parts in a greater or leſs proportion; then likewiſe the weights of thoſe bodies would be to the weight of the whole moon in a greater or leſs proportion; againſt what we have ſhewed above.

COR. 1. Hence the weights of bodies do not depend upon their forms and textures. For if the weights could be altered with the forms, they would be greater or leſs, according to the variety of forms in equal matter; altogether againſt experience.

COR. 2. Univerſally, all bodies about the earth gravitate towards the earth; and the weights of all, at equal diſtances from the earth's centre, are as the quantities of matter which they ſeverally contain. This is the quality of all bodies within the reach of our experiments; and therefore (by rule 3.) to be affirmed of all bodies whatſoever. If ether, or any other body, were either altogether void of gravity, or were to gravitate leſs in proportion to its quantity of matter; then, becauſe (according to Ariſtotle, Des Cartes, and others) there is no difference betwixt that and other bodies, but in mere form of matter, by a ſucceſſive change from form to form, it might be changed at laſt into a body of the ſame condition with thoſe which gravitate moſt in proportion to their quantity of matter; and, on the other hand, the heavieſt bodies, acquiring the firſt form of that body, might by degrees quite loſe their gravity. And therefore the weights would depend upon the forms of bodies, and with thoſe forms might be changed, contrary to what was proved in the preceding corollary.

COR. 3. All ſpaces are not equally full. For if all ſpaces were equally full, then the ſpecific gravity of the fluid which fills the region of the air, on account of the extreme denſity of the matter, would fall nothing ſhort of the ſpecific gravity of quick-ſilver or gold, or any other the moſt denſe body; and therefore, neither gold, nor any other body, could deſcend in air. For bodies do not deſcend in fluids, unleſs they are ſpecifically heavier than the fluids. And if the quantity of matter in a given ſpace can by any rarefaction be diminiſhed, what ſhould hinder a diminution to infinity?

COR. 4. If all the ſolid particles of all bodies are of the ſame denſity, nor can be rarefied without pores, a void ſpace or vacuum muſt be granted. (By bodies of the ſame denſity, our author means thoſe whoſe *vires inertiæ* are in the proportion of their bulks.)

PROP. VI. That there is a power of gravity tending to all bodies, proportional to the ſeveral quantities of matter which they contain. That all the planets mutually gravitate one towards another, we have proved before; as well as that the force of gravity towards every one of them, conſidered apart, is reciprocally as the ſquare of the diſtance of places from the centre of the planet. And thence it follows, that the gravity tending towards all the planets is proportional to the matter which they contain. Moreover, ſince

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all the parts of any planet *A* gravitate towards any other planet *B*, and the gravity of every part is to the gravity of the whole as the matter of the part to the matter of the whole; and (by law 3.) to every action corresponds an equal re-action: therefore the planet *B* will, on the other hand, gravitate towards all the parts of the planet *A*; and its gravity towards any one part will be to the gravity towards the whole, as the matter of the part to the matter of the whole. Q. E. D.

COR. 1. Therefore the force of gravity towards any whole planet, ariſes from, and is compounded of, the forces of gravity towards all its parts. Magnetic and electric attractions afford us examples of this. For all attraction towards the whole ariſes from the attractions towards the ſeveral parts. The thing may be eaſily underſtood in gravity, if we conſider a greater planet as formed of a number of leſſer planets, meeting together in one globe. For hence it would appear that the force of the whole muſt ariſe from the forces of the component parts. If it be objected, that, according to this law, all bodies with us muſt mutually gravitate one towards another, whereas no ſuch gravitation anywhere appears; it is anſwered, that, ſince the gravitation towards theſe bodies is to the gravitation towards the whole earth, as theſe bodies are to the whole earth, the gravitation towards them muſt be far leſs than to fall under the obſervation of our ſenſes. (The experiments with regard to the attraction of mountains, however, have now further elucidated this point.)

COR. 2. The force of gravity towards the ſeveral equal particles of any body, is reciprocally as the ſquare of the diſtance of places from the particles.

PROP. VII. In two ſpheres mutually gravitating each towards the other, if the matter, in places on all ſides round about and equidiſtant from the centres, is ſimilar, the weight of either ſphere towards the other will be reciprocally as the ſquare of the diſtance between their centres. For the demonſtration of this, ſee the *Principia*, book i. ſup. pp. 75. and 76.

COR. 1. Hence we may find and compare together the weights of bodies towards different planets. For the weights of bodies revolving in circles about planets are as the diameters of the circles directly, and the ſquares of their periodic times reciprocally; and their weights at the ſurfaces of the planets, or at any other diſtances from their centres, are (by this prop.) greater or leſs, in the reciprocal duplicate proportion of the diſtances. Thus, from the periodic times of Venus, revolving about the ſun in 224d. 16½h.; of the utmoſt circumjovial ſatellite revolving about Jupiter in 16d. 16$\frac{8}{15}$h.; of the Huygenian ſatellite about Saturn in 15d. 22$\frac{2}{3}$h.; and of the moon about the earth in 27d. 7h. 43′; compared with the mean diſtance of Venus from the ſun, and with the greateſt heliocentric elongations of the utmoſt circumjovial ſatellite from Jupiter's centre, 8′ 16″; of the Huygenian ſatellite from the centre of Saturn, 5′ 4″; and of the moon from the earth, 10′ 33″: by computation our author found, that the weight of equal bodies, at equal diſtances from the centres of the ſun, of Jupiter, of Saturn, and of the earth, towards the ſun, Jupiter, Saturn, and the earth, were one to another as $\frac{1}{1067}$, $\frac{1}{1033}$, and $\frac{1}{1067182}$ reſpectively. Then, becauſe as the diſtances are increaſed or diminiſhed, the weights are diminiſhed or increaſed in a duplicate ratio; the weights of equal bodies towards the ſun, Jupiter, Saturn, and the earth, at the diſtances 10000, 997, 791, and 109, from their centres, that is, at their very ſuperficies, will be as 10000, 943, 529, and 435 reſpectively.

COR. 2. Hence likewiſe we diſcover the quantity of matter in the ſeveral planets. For their quantities of matter are as the forces of gravity at equal diſtances from their centres, that is, in the ſun, Jupiter, Saturn, and the earth, as 1, $\frac{1}{1067}$, $\frac{1}{1033}$, and $\frac{1}{1067182}$ reſpectively. If the parallax of the ſun be taken greater or leſs than 10″ 30‴, the quantity of matter in the earth muſt be augmented or diminiſhed in the triplicate of that proportion.

COR. 3. Hence alſo we find the denſities of the planets. For (by prop. 72. book 1.) the weights of equal and ſimilar bodies towards ſimilar ſpheres, are, at the ſurfaces of thoſe ſpheres, as the diameters of the ſpheres. And therefore the denſities of diſſimilar ſpheres are as thoſe weights applied to the diameters of the ſpheres. But the true diameters of the ſun, Jupiter, Saturn, and the earth, were one to another as 10000, 997, 791, and 109; and the weights towards the ſame, as 10000, 943, 529, and 435 reſpectively; and therefore their denſities are as 100, 94½, 67, and 400. The denſity of the earth, which comes out by this computation, does not depend upon the parallax of the ſun, but is determined by the parallax of the moon, and therefore is here truly defined. The ſun therefore is a little denſer than Jupiter, and Jupiter than Saturn, and the earth four times denſer than the ſun; for the ſun, by its great heat, is kept in a ſort of a rarefied ſtate. The moon alſo is denſer than the earth.

COR. 4. The ſmaller the planets are, *cæteris paribus*, of ſo much the greater denſity. For ſo the powers of gravity on their ſeveral ſurfaces come nearer to equality. They are likewiſe, *cæteris paribus*, of the greater denſity as they are nearer to the ſun. So Jupiter is more denſe than Saturn, and the earth than Jupiter. For the planets were to be placed at different diſtances from the ſun, that, according to their degrees of denſity, they might enjoy a greater or leſs proportion of the ſun's heat. Our water, if it were removed as far as the orb of Saturn, would be converted into ice; and in the orb of Mercury would quickly fly away in vapour. For the light of the ſun, to which its heat is proportional, is ſeven times denſer in the orb of Mercury than with us; and by the thermometer Sir Iſaac found that a ſevenfold heat of our ſummer ſun will make water boil. Nor are we to doubt that the matter of Mercury is adapted to its heat, and is therefore more denſe than the matter of our earth; ſince, in a denſer matter, the operations of nature require a ſtronger heat.

It is ſhown in the ſcholium of prop. 22. book 2 of the *Principia*, that, at the height of 200 miles above the earth, the air is more rare than it is at the ſuperficies of the earth, in the ratio of 30 to 0,00000000000003998, or as 750000000000000 to 1 nearly

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nearly. And hence the planet Jupiter, revolving in a medium of the same denfity with that fuperior air, would not lofe by the refiftances of the medium the 1000000th part of its motion in 1000000 years. In the fpaces near the earth, the refiftance is produced only by the air, exhalations, and vapours. When thefe are carefully exhaufted by the air-pump from under the receiver, heavy bodies fall within the receiver with perfect freedom, and without the leaft fenfible refiftance; gold itfelf, and the lighteft down, let fall together, will defcend with equal velocity; and though they fall through a fpace of four, fix, and eight feet, they will come to the bottom at the fame time; as appears from experiments that have often been made. And therefore the celeftial regions being perfectly void of air and exhalations, the planets and comets meeting no fenfible refiftance in thofe fpaces, will continue their motions through them for an immenfe fpace of time.

NEW

NEWTON-KIRK, a town of Northumberland, near the Cheviot Hills.

NEWTON LIMAVADY. See LIMAVADY.

NEWTON-SAVILLE, a town of Ireland, in the county of Tyrone, and prov. of Ulfter.

(1.) NEWTON-STEWART. See NEWTON-DOUGLAS.

(2.) NEWTON-STEWART, a town of Ireland, in Tyrone, Ulfter.

(1.) NEWTOWN, a borough of Ireland, in Down county; 9 miles E. of Belfaft, and 17 N. of Down-Patrick.

(2—4.) NEWTOWN, 3 towns of Ireland: 1. in Leitrim: 2. in Sligo: 3. in Waterford.

(5—10.) NEWTOWN, 6 fmall towns of England: 1. in Cumberland: 2. in Durham, N. of Darlington: 3. in ditto, S. of Sunderland: 4. in Leiceftershire, near Groby: 5. in Northumberland, S. of Alnwick: 6. in ditto, NW. of Rothbury.

(11—15.) NEWTOWN. See NEWTON, N° 8, 11, 15.

NEWTOWN-ARDES, a town of Ireland, in Down county, at the N. point of Lake Strangford. It has a great linen manufactory, celebrated for fine diaper linens.

NEWTOWN MOUNT KENNEDY, a town of Ireland, in Wicklow, Leinfter, 17 miles from Dublin.

NEWTOWN OF NEWMILL, a fmall town of Scotland, in Banff-fhire, in the parifh of Keith, erected by the late E. of Fife; containing 330 inhabitants in 1791.

NEWTRAN, a town of Eflex, E. of Clavering.

NEWTYA, a port little known, on the coaft between Goa, the capital of the Portugueſe ſettlements in India, and the Engliſh ſettlement of Bombay. Mr Rennel conjectures it to be the NITRIAS of Pliny, near which the pirates cruized for the Roman fhip. He places it in about 73° 16′ 30″ E. and Lat. 15° 52′ 30″ N.

NEWTYLD, or } a parifh of Scotland, in An-
(1.) NEWTYLE, } gus-fhire, on the Sidlie hills, near two miles fquare. The furface is partly hilly, partly level; the climate dry and healthy; the foil a mixture of black earth and clay, or fand and gravel, but in general fertile. The population, in 1791, was 594; decreafe 319 fince 1755: but in 1801, it had increafed to 781; increafe 362 fince 1771. About 800 acres are hills and moffes; 1600 are arable, producing wheat, oats, barley, turnips, &c. Barley is exported.

(2.) NEWTYLE, a village in the above parifh, on the road from Dundee to Meigle, containing 230 inhabitants, chiefly weavers. Near it are the ruins of the caftle of *Hatten*, built in 1575 by

NEX

Laurence Lord Oliphant, as well as of a ftill more ancient caftle called *Balcraig*.

NEW UTRECHT, a maritime town of New York, in King's County, Long Iſland, 8 miles S. of New York.

NEW WALES. See WALES, N° 3—5.

NEW-WIED. See NEUWIED.

(1.) * NEW-YEAR'S-GIFT. *n. f.* [*new*, *year*, and *gift*.] Preſent made on the firſt day of the year. —If I be ſerved ſuch a trick, I'll have my brains taken out and buttered, and give them to a dog for a *new-year's-gift*. *Shak. Merry Wives.*—When he ſat on the throne diſtributing *new-year's-gifts*, he had his altar of incenſe by him, that before they received gifts they might caſt a little incenſe into the fire; which all good Chriſtians refuſed to do. *Stilling fleet.*

(2.) NEW YEAR'S GIFTS. Nonius Marcellus refers the origin of new year's gifts among the Romans to Titus Tatius, king of the Sabines, who reigned at Rome conjointly with Romulus, and who having conſidered as a good omen a preſent of ſome branches cut in a wood conſecrated to *Strenia*, the goddeſs of ſtrength, which he received on the firſt day of the new year, authoriſed this cuſtom afterwards, and gave to theſe perſons the name of *ſtrenæ*. The Romans on that day celebrated a feſtival in honour of Janus, and paid their reſpects at the ſame time to Juno; but they did not paſs it in idleneſs, leſt they ſhould become indolent during the reſt of the year. They ſent preſents to one another of figs, dates, honey, &c. to ſhow their friends that they wiſhed them a happy and agreeable life. Clients, or thoſe who were under the protection of the great, carried preſents of this kind to their patrons, adding to them a ſmall piece of ſilver. Under Auguſtus, the ſenate, the knights, and the people, preſented ſuch gifts to him, and in his abſence depoſited them in the Capitol. Of the ſucceeding princes ſome adopted this cuſtom and others aboliſhed it; but it always continued among the people. The early Chriſtians condemned it, becauſe it appeared to be a relique of Paganiſm, and a ſpecies of ſuperſtition; but when it began to have no other object than that of being a mark of eſteem, the church ceaſed to diſapprove of it.

NEW YEAR'S ISLES, a cluſter of ſmall iſlands on the N. ſide of Staten Iſland, much frequented by ſea lions, vultures, petuls, penguins, ſeals, &c. Lon. 64. 20. W. Lat. 54. 46. S.

NEW YORK. See YORK, § 3—5.

NEW ZEALAND. See ZEALAND.

NEXI, in Roman antiquity, perſons free-born, who

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who for debt were reduced to a ſtate of ſlavery. By the laws of the XII. tables it was ordained, that inſolvent debtors ſhould be given up to their creditors to be bound in fetters and cords, whence they were called *Nexi*; and though they did not entirely loſe the rights of freemen, yet they were often treated more harſhly than the ſlaves themſelves. If one was indebted to ſeveral perſons, and could not within 60 days find a cautioner, his body, according to ſome, but according to others his effects, might be cut in pieces, and divided among his creditors. This latter opinion ſeems by much the moſt probable, as Livy mentions a law by which creditors had a right to attach the goods, but not the perſons of their debtors.

NEXOE, a ſea-port of Denmark, on the E. coaſt of the iſle of Bornholm.

NEXON, a town of France, in the dep. of Upper Vienne; 15 miles SW. of Limoges.

(1.) *NEXT. *adj.* [*next*, Saxon, by a colloquial change from *nehſt* or *nyhſt*, the ſuperlative of *neh* or *nyh*; *neeſt*, Scottiſh.] 1. Neareſt in place; immediately ſucceeding in order.—Want ſupplieth itſelf of what is *next*, and in many times the *next* way. *Bacon.*—

The queen already ſat
High on a golden bed; her princely gueſt
Was *next* her ſide; in order ſat the reſt. *Dryden.*

The *next* in place and puniſhment were they
Who prodigally throw their ſouls away. *Dryd.*

2. Neareſt in time.—

The good man warn'd us from his text,
That none could tell whoſe turn ſhould be the *next*. *Gay.*

3. Neareſt in any gradation.—If the king himſelf had ſtaid at London, or, which had been the *next* beſt, kept his court at York, and ſent the army on their proper errand, his enemies had been ſpeedily ſubdued. *Clarendon.*—

O fortunate young man! at leaſt your lays
Are *next* to his. *Dryden.*

—Finite and infinite, being by the mind looked on as modifications of expanſion and duration, the *next* thing to be conſidered, is, how the mind comes by them. *Locke.*—

That's a difficulty *next* to impoſſible. *Rowe.*

There, bleſt with health, with buſineſs unperplext,
This life we reliſh, and enſure the *next*. *Young.*

(2.) *NEXT. *adv.* At the time or turn immediately ſucceeding.—

Th' unwary nymph
Deſir'd of Jove, when *next* he fought her bed,
To grant a certain gift. *Addiſon.*

NEYBA, or NEYVA, a river of Hiſpaniola, which runs into the ſea 25 m. W. of St Domingo.

NEYDORFF, a town of Germany, in Auſtria; 7 miles WNW. of Falkenſtein.

NEYERING, a river of Carniola, which runs into the Save, 2 miles N. of Buckenſtein.

NEYKIRCHEN, 2 towns of Auſtria: 1. ſix miles SW. of Neuſtatt: 2. four miles N. of Schwannaſtatt.

NEYLAND. See NAYLAND.

NEYLEAU, a town of Franconia, in Culmbach.

NEYMARCK, a town of Auſtria, 6 miles S. of Yps.

NEYMARKT, 2 towns of Auſtria: 1. ſix miles W. of Efferding: 2. three miles S. of Frieſtatt.

NEYPERG, a town of Germany, in Stiria.

NEYRAC, a town of France, in the dep. of Aveiron, 18 miles N. of Rhodez.

NEYSIDEL, a town of Auſtria, 3 miles S. of Vienna.

NEYSTADT, a town of Auſtria, 8 miles W. of Ips.

NEYSZE. See NEISSE, N° 1—3.

NEYTRECHT, a town of Upper Hungary, capital of a county of the ſame name, with a biſhop's ſee; ſeated on the *Neitra*, 40 miles NE. of Preſburg. Lon. 17. 49. E. Lat. 48. 28. N.

(1.) NEYVA, or NEYBA, a town of S. America, in Terra Firma, capital of a mountainous diſtrict in Popayan.

(2.) NEYVA. See NEYBA.

NEZ, [Fr. i. e. *Noſe* or *Face*,] in geography, is uſed by the French for a cape or promontory: thus,

1. NEZ DE JOBOURG, a cape on the W. coaſt of France, in the Engliſh Channel, 3 miles S. of Cape Anderville. Lon. 15. 43. E. of Ferro. Lat. 49. 40. N.

2. NEZ DE QUERQUEVILLE, a cape on the W. coaſt of France, in the Engliſh Channel, 3 miles NW. of Cherburg.

NEZIN, a town of Ruſſia, in Tchernigov.

NEZITZA, a river of Ruſſia, in Archangel, which runs into the Frozen Sea, 28 miles S. of Ponoi.

NEZLET, a town of Egypt, 7 miles N. of Atfich.

NGAN-CHAN, a city of China, of the 1ſt rank, in the province of Koei-tcheou. Its territory is well watered, and fertile, though very mountainous; and comprehends 3 cities of the 2d order, and 5 of the 3d, with ſeveral forts. It lies 1005 miles SSW. of Peking. Lon. 123. 17. E. Ferro. Lat. 26. 12. N.

NGAN-KING, a city of China, and capital of the W. part of the province of Kiang-nan. It is governed by a viceroy, who keeps a large garriſon in a fort built on the banks of the river Yang-tſe-kiang. Its ſituation is delightful; its commerce and riches render it very conſiderable; and every thing that goes from the S. part of China to Nan-king muſt paſs through it. All the country belonging to it is level, pleaſant, and fertile. It has under its juriſdiction 6 cities of the 3d claſs. It is 575 miles S. of Peking. Lon. 134. 0. E. Ferro. Lat. 30. 37. N.

NGAN-LO, a city of China of the 1ſt rank, in the prov. of Hou-Quang, on the banks of the river Han, in a fertile country. Its diſtrict contains 2 towns of the 2d rank, and 5 of the 3d. It lies 575 miles SW. of Peking. Lon. 129. 48. E. Lat. 31. 14. N.

NGAN-Y, a town of China of the 3d rank, in the prov. of Kiang-ſi, 20 miles NW. of Nan-tchang, near a lake, whoſe waters are as ſalt as thoſe of the ocean, and from which much ſalt is extracted.

NGO-HIEN, a town of China of the 3d claſs, in the prov. of Chang-tong.

NGO-KIA, a Chineſe drug, of which the compoſition will no doubt appear as ſingular as the numerous properties aſcribed to it. In the province of Chang-tong, near Ngo-hien, is a well formed

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formed by nature, 70 feet in depth, which has a communication with ſome ſubterranean lake, or large reſervoir. The water drawn from it is exceedingly clear, and much heavier than common; and if it be mixed with muddy water, it purifies it, and renders it limpid, by precipitating all its impurities to the bottom of the veſſel. This water is employed in making the ngo-kia, which is a kind of glue procured from the ſkin of a black aſs. The animal is killed and flayed, and the ſkin is ſteeped for 5 days in water drawn from this well. It is then taken out, ſcraped, and cleaned; afterwards cut into ſmall pieces, which are boiled over a ſlow fire, in ſome of the ſame water, until it is reduced to a jelly, which is ſtrained, while warm, through a cloth, to free it from all the groſs matter. When this glue is cool, and has acquired a conſiſtence, it is formed into ſquare cakes, upon which the Chineſe imprint characters and coats of arms, or the ſigns of their ſhops. This well is the only one of the kind in China; it is always ſhut, and ſealed by the governor of the place, until the cuſtomary day of making the emperor's glue. This operation generally laſts from the autumnal harveſt till March. During that time the neighbouring people and merchants treat for the purchaſe of the glue with thoſe who guard the well, and with the people who make it. The latter manufacture as much of it as they can, on their own account, with this difference, that it is not ſo pure, and that they are leſs ſcrupulous in examining whether the aſs be fat or of a very black colour: however, all the glue made here is as much eſteemed at Peking as that which the mandarines who are on the ſpot tranſmit to court, and to their friends. As this drug is in great requeſt, and as the quantity of it made at Ngo-hien is not ſufficient to ſupply the whole empire, people counterfeit it elſewhere, and manufacture a ſpurious kind from the ſkins of mules, horſes, and camels, and ſometimes even from old bones. It is, however, eaſy to diſtinguiſh that which is genuine; it has neither a bad ſmell nor a diſagreeable taſte when applied to the mouth; it is brittle and friable, and always of a deep black colour, ſometimes inclining to red. The qualities of the counterfeit kind are entirely different; both its taſte and ſmell are diſagreeable, and it is viſcous and flabby even when made of the ſkin of a hog, which is that which imitates the true kind beſt. The Chineſe attribute a great number of virtues to this drug. They ſay, that it diſſolves phlegm, facilitates the motion of the lungs, gives free reſpiration to thoſe who breathe with difficulty, comforts the breaſt, increaſes the blood, ſtops dyſenteries, provokes urine, and ſtrengthens children in the womb. Without warranting the truth of all theſe properties, it appears, at leaſt, certain, by the teſtimony of the miſſionaries, that this drug is ſerviceable in all diſeaſes of the lungs. It is taken with a decoction of ſimples, and ſometimes in powder.

NGOLA, king of Angola. See ANGOLA, § 3.

NHING, a town of China of the 2d rank, in the prov. of Kiang-ſi; 675 miles S. of Peking.

NHING-KOUE, a city of China, of the 1ſt rank, in the prov. of Kiang-nan, in a mountainous country, famous for its paper manufactures, made from reeds. Its diſtrict contains 6 towns of the 3d rank. It is 537 miles SSE. of Peking. Lon. 136. 10. E. Ferro. Lat. 31. 2. N.

NIA, or UNIE, an iſland of Maritime Auſtria, in Dalmatia, W. of Oſero. It is 7 miles long, and has a ſpacious and ſafe harbour.

NIAB, a town of Arabia, near the coaſt of the Red Sea; 72 miles WSW. of Saab, and 58 N. of Abu-Ariſch.

(1.) NIAGARA, a river of the United States, which flows from Lake ERIE, and runs by a NW. courſe into the SW. end of Lake ONTARIO, conſtituting part of the boundary between the United States and Canada. It is 34 miles long, including its meanders. About 20 miles below Lake Erie is the great Cataract, called the *Falls of Niagara*, which is juſtly reckoned one of the greateſt natural curioſities in the world. Theſe falls run from SSE. to NNW.; and the rock of the falls croſſes them not in a right line, but forms a kind of figure like an hollow ſemicircle, or horſe-ſhoe. Above the falls in the middle of the river, is an iſland called *Grand Iſle*, about 900 or 1000 feet long; the lower end of which is juſt at the perpendicular edge of the fall. On both ſides of this iſland runs all the water that comes from the lakes of Canada; viz. Lakes Superior, Michigan, Huron, and Erie. Before the water comes to this iſland, it runs but ſlowly compared with its motion afterwards, when it grows the moſt rapid in the world, running with a ſurpriſing ſwiftneſs before it comes to the fall. It is perfectly white, and in many places is thrown high up into the air. At this iſland, the river divides into two channels; the perpendicular deſcent of the NE. channel, as meaſured by Dr M'Cauſlin, is 163 feet; that of the NW. 143; the breadth of the cataract and iſland, above a mile. The water that runs down on the W. ſide is more rapid, in greater abundance, and whiter, than that on the E. ſide; and ſeems almoſt to outfly an arrow in ſwiftneſs. At the principal fall, on looking up the river, one may ſee that the water is every where exceedingly ſteep, almoſt like the ſide of an hill; but upon looking at the fall itſelf, it is impoſſible to expreſs the amazement it occaſions. The height of it, as meaſured by mathematical inſtruments, is exactly 137 feet; and when the water is come to the bottom, it jumps back to a very great height in the air. The noiſe is heard at the diſtance of 45 miles. At fort Niagara, when they hear the noiſe of the fall more loud than ordinary, they are ſure that a NE. wind will follow; which is the more ſurpriſing, as the fort lies SW. from the fall. Sometimes the fall makes a much greater noiſe than at others; and this is held for an infallible ſign of approaching rain or bad weather. From the place where the water falls there ariſes a great quantity of vapour like very thick ſmoke, inſomuch that when viewed at a diſtance one would think that the Indians had ſet the foreſts on fire. Theſe vapours riſe high in the air when it is calm, but are diſperſed by the wind when it blows hard. In Sept. and Oct. ſuch quantities of dead water-fowl are found every morning below the fall, on the ſhore, that the garriſon of the fort live chiefly upon them. Beſides the fowls, they find ſeveral ſorts of dead fiſh, alſo deer, bears, and other animals which have

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tried to croſs the water above the fall: the larger animals are generally found broken to pieces. Juſt below, a little way from the great fall, the water is not rapid, but goes in circles, and whirls like a boiling pot; which however does not hinder the Indians going upon it in ſmall canoes a-fiſhing; but a little further, and lower, the other ſmaller falls begin. There is an iſland in the middle of the river above the fall, where the Indians go often to kill deer, which have tried to croſs the river, and are driven upon it by the ſtream. On the W. ſide of this iſland are ſome ſmall iſlands or rocks of no conſequence. The E. ſide of the river is almoſt perpendicular, the W. ſide more ſloping. In former times, a part of the rock at the fall which is on the W. ſide of the iſland, hung over in ſuch a manner, that the water which fell perpendicularly from it left a vacancy below, ſo that people could go under between the rock and the water; but the prominent part ſome years ago broke off and fell down. The breadth of the great fall, as it runs in a ſemicircle, is reckoned to be about 300 feet. Below the fall, in the holes of the rocks, are great plenty of eels, which the Indians and French catch with their hands. Every day when the ſun ſhines, may be ſeen from 10 A. M. till 2 P. M. below the fall, a glorious rainbow, and ſometimes two, one within the other. The more vapours, the brighter and clearer is the rainbow. When the wind carries the vapours from that place, the rainbow is gone, but appears again as ſoon as new vapours ariſe. From the fall to the landing above it, where the canoes from Lake Erie put aſhore (or from the fall to the upper end of the carrying place), is half a mile. Lower the canoes dare not come. They have often found below the fall pieces of human bodies, that have unhappily come down to the fall. The French ſay, that they have often thrown great trees into the water above, to ſee them tumble down the fall: they went down with ſurpriſing ſwiftneſs, but could never be ſeen afterwards; whence it was thought there was a bottomleſs abyſs juſt under the fall. The rock of the fall conſiſts of a grey limeſtone.

(2.) NIAGARA, a fort and poſt town of New York, on the E. ſide of the above river, built by the French in 1725, but which was taken from them in 1759. It remained in poſſeſſion of the Britiſh till 1796, when it was delivered up to the United States, according to the treaty of 1794. The fort in a manner commands all the interior parts of the continent; is a key to the North-Weſtern Territory, and is ſurrounded by the SIX NATIONS of Indians. It is ſituated on a ſmall peninſula formed by the Niagara as it flows into the lake Ontario, about 14 miles below the great cataract, called the *Falls of Niagara*.

NIAKDELSKOI, a town of Ruſſia, in the prov. of Archangel; 62 miles NNW. of Kola.

NIALMA, a town of Aſia, in Thibet, 76 miles N. of Catmandu. Lon. 85. 27. E. Lat. 29. 23. N.

NIARAN KENTCHIAN, a mountain of Thibet. Lon. 101. 30. E. of Ferro. Lat. 28. 25. N.

(1.) * NIAS. *adj.* [*niais*, Fr.] Simple, ſilly, and fooliſh.—A *nias* hawk is one taken newly from the neſt, and not able to help itſelf; and hence niſey, a ſilly perſon. *Bailey.*

(2.) NIAS, in geography, an iſland near the W. coaſt of Sumatra, remarkable for the beauty of its female natives, who are purchaſed as ſlaves by the Dutch and Portugueſe inhabitants of Batavia, &c. Lon. 97. 0. E. Lat. 1. 0. N.

* NIB. *n. ſ.* [*neb*, Sax. the face; *nebbe*, Dutch, the bill.] 1. The bill or neck of a bird. See NEB. 2. The point of any thing, generally of a pen.—A tree called the bejuco, which twines about other trees, with its end hanging downwards, travellers cut the *nib* off it, and preſently a ſpout of water runs out from it as clear as cryſtal. *Derham.*

NIBANO, a town of Italy, in Parma.

* NIBBED. *adj.* [from *nib.*] Having a nib.

(1.) * *To* NIBBLE. *v. a.* [from *nib*, the beak or mouth.] 1. To bite by little at a time; to eat ſlowly.—

Thy turfy mountains, where live *nibbling* ſheep,
And flat meads thatch'd with clover them to keep. *Shak.*

It is the roſe that bleeds, when he
Nibbles his nice phlebotomy. *Cleaveland.*

—Had not he better have born Wat's *nibbling* of his plants and roots now, than the huntſman's eating of him out of houſe and home? *L'Eſtr.*—

Many there are who *nibble* without leave;
But none, who are not born to taſte, ſurvive. *Granville.*

2. To bite as a fiſh does the bait.—

The roving trout
Greedily ſucks in the twining bait,
And tugs and *nibbles* the fallacious meat. *Gay.*

(2.) * *To* NIBBLE. *v. n.* 1. To bite at.—As pigeons bill, ſo wedlock would be *nibbling*. *Shak.*

They gape at rich revenues which you hold,
And fain would *nibble* at your grandame gold. *Dryden.*

—If you would be *nibbling*, here is a hand to ſtay your ſtomach. *Dryden.*—This fiſh plunging himſelf in mud, and then lifting up his head a little, caſts out the ſtring; which the little fiſhes taking for a worm, and *nibbling* at it, he immediately plucks them both in together. *Grew's Muſeum.* 2. To carp at; to find fault with.—Inſtead of returning a full anſwer to my book, he manifeſtly falls a *nibbling* at one ſingle paſſage in it. *Tillotſon.*

* NIBBLER. *n. ſ.* [from *nibble.*] One that bites by little at a time.

NIBE, a town of Denmark, in N. Jutland.

NIBIANO, a town of Italy, in Placentia.

NIBON, a ſmall iſland of Orkney, N. of Eglesbay, in the pariſh of Northmaven, which affords good paſture for ſheep.

NIBROECK, a town of Holland, in the dep. of the Rhine, and ci-devant province of Guelderland; 6 miles S. of Deventer.

NIBSAAE, a river of Denmark, in Sleſwick, which runs into the North Sea below Ripen.

(1.) NICÆA, in ancient geography, the metropolis of Bithynia; ſituated on the lake Aſcanius, in a large and fertile plain; in compaſs 16 ſtadia: firſt built by Antigonus, the ſon of Philip, and thence called *Antigonea*; afterwards completed by Lyſimachus, who called it *Nicæa*, after his conſort

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consort the daughter of Antipater. According to Stephanus, it was originally a colony of the Bottiæi, a people of Thrace, and called *Ancore;* and afterwards called *Nicæa;* and NICE in Asia Minor: famous for the first general council. See NICE, N° 1.

(2—6.) NICÆA is also the name of other 5 ancient towns; viz. 1. in Corsica: (*Diod. Sic.*) 2. in the Hither India; (*Arrian.*) situated on the W. side of the Hydaspes, opposite to Bucephale, on the E. side: 3. a town of Liguria, at the Maritime Alps, on the E. side of the Paulon near its mouth, which runs between the Varus and Nicæa. (*Mela.*) 4. A colony of the Massilians; (*Stephanus.*) the last town of Italy to the west; Now NIZZA or *Nice*, on the Mediterranean: (see NICE, N° 2.) 5. in Locris, (*Strabo.*) near Thermopylæ; one of the keys of that pass. It stood on the Sinus Maliacus.

NICAISE, Claude, a celebrated antiquary in the 17th century, descended of a good family at Dijon, where his brother was proctor-general of the chamber of accounts. He became an ecclesiastic, and was made a canon in the holy chapel at Dijon; but devoted himself to the study of antique monuments. Having laid a proper foundation of learning at home, he resigned his canonry, and went to Rome, where he resided many years; and after his return to France, he held a correspondence with almost all the learned men in Europe. This took up a great part of his time, and hindered him from enriching the public with any large works. He published a Latin dissertation *De Nummo Pantheo;* An Explanation of an Antique Monument found at Guienne, in the diocese of Aach; and A Discourse upon the Form and Figure of the Syrens, which made a great noise. In this tract, following the opinion of Huet bishop of Avranches, he undertook to prove, that they were in reality birds, and not fishes or sea-monsters. He translated into French, from the Italian, a piece of Bellori, containing a description of the pictures in the Vatican, to which he added, A Dissertation upon the Schools of Athens and Parnassus, two of Raphael's pictures. He wrote also a small tract upon the ancient music; but while he was labouring to make out an explanation of that antique inscription, *Minervæ Arpatiæ*, which was found in the village of Velley, he died there in October 1701, aged 78.

(1.) NICANDER, a native of Colophon, a celebrated grammarian poet, and physician, who lived about the 160th Olympiad, A. A. C. 140, in the reign of Attalus king of Pergamus, who overcame the Gallo-Greeks. He lived many years in Ætolia, of which country he wrote a history. He wrote also many other works, of which only two are extant, viz. 1. *Theriaca*, describing in verse the many accidents attending wounds made by venomous beasts, with the proper remedies: 2. *Alexipharmaca*, wherein he treats poetically of poisons and their antidotes.

(2.) NICANDER, another ancient author, a native of Thyatira.

NICANDRA, in botany, a genus of the monogynia order, belonging to the decandria class of plants; and in the natural method ranking under the 30th order, *Contortæ*. The calyx is monophyllous and quadripartite: the corolla is monopetalous, tubulated, and parted into 10 *laciniæ*: the fruit is an oval berry, which is grooved longitudinally, and contains many small angular seeds. This genus is not mentioned by Mr Lee. There is only one species.

NICANDRA AMARA, a native of Guiana. The leaves and stalks are bitter, and used by the natives as an emetic and purge.

(1.) NICARAGUA, a maritime province of South America, in Mexico, bounded on the N. by Honduras, on the E. by the North Sea, on the SE. by Costa Rica, and on the SW. by the South Sea, being 400 miles in length from E. to W. and 120 in breadth from N. to S. It is one of the most fruitful and agreeable provinces in Mexico, and is well watered with lakes and rivers. The air is wholesome and temperate: and the country produces plenty of sugar, cochineal, and fine chocolate. Leon is the capital.

(2.) NICARAGUA, a large river of South America, in the above province. It is full of dreadful cataracts, and falls at length into the North Sea.

(3.) NICARAGUA, a lake in the above province, 200 miles in circumference. It has an island in the middle, and, some say, has a tide. It communicates with the Atlantic by the river St Juan.

(4.) NICARAGUA, a town in the above province.

NICARIA, an island of the Archipelago, between Samos and Tine, about 50 miles in circumference; anciently called *Icaria*. A chain of high mountains runs through the middle, covered with wood, and supplies the country with springs. The inhabitants are of the Greek communion. They cultivate wheat, and export barley and figs, honey and wax. They are about 3000 in number, and remarkable for diving. "The richest men in the island, (says M. Thevenot), give their daughters to the best divers." Lon. 44. 8. E. of Ferro. Lat. 37. 45. N.

NICASTRO, an episcopal town of Naples, in Calabria Ultra; 16 miles S. of Cosenza. Lon. 15. 59. E. Lat. 39. 15. N.

NICATOR, [Νικατωρ, *i. e.* victor,] a surname assumed by SELEUCUS I. King of Syria.

NICAUAR, a town of Ceylon, 50 miles SW. of Trincomali.

NICAUSIS, a name given by some authors to the queen of Sheba, or *Saba*, or Ethiopia, who visited Solomon; called *Balkis* by others; (See BALKIS;) and MAKEDA, by Mr Bruce; who gives a long history of her descendants from David I. her son by Solomon, to the time when he visited ABYSSINIA, where the reigning princes still boast their descent from her. See ETHIOPIA, § 10. Josephus says, she reigned over Egypt and Ethiopia; but Mr Bruce restricts her dominions to SABA.

NICCA, a town in the isle of Cherso, and province of Quarnaro; 20 miles W. of Cherso.

(1.) NICCOLO, ST, a large sea-port in the ci-devant Lagunes of Venice, and province of Dogado.

(2.) NICCOLO, ST, DI LUDO, a sea-port in Malamocco; with a fort and barracks.

(1.) NICE, an ancient town of Asia, in Natolia, now

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now called ISNICK, with a Greek archbishop's see. It is famous for the general council assembled here in 325, which endeavoured to suppress the doctrines of Arius. It was formerly a large, populous, and well-built place, and is still considerable. See ISNIC.

(2.) NICE, a ci-devant county and province of Savoy, now annexed to the French empire, and included in the dep. of the Maritime Alps. The inhabitants supply Genoa with a great deal of timber for building ships, and carry on a great trade in linen cloth, paper, oil, wine, and honey. —Although it lies on this side of the mountains, geographers have always considered it as a province of Italy. The Var which was its western limit, was also the boundary of the county, and flows into the sea 3 miles from the capital. It is partly covered by the maritime Alps; and was bordered on the E. by Piedmont, and the state of Genoa; on the S. by the Mediterranean; on the W. by the Var; and on the N. by Dauphiny. Its length is about 36 miles; its breadth 18; and its population is about 120,000 souls. It is impossible to find a happier climate than Nice, both for summer and winter. Reamur's thermometer, in 1781, never fell more than three degrees below the freezing point, and that only for two days; while at Geneva it fell ten: and in winter 1785 it fell only two degrees; while at Geneva it fell 15. May is rarely so fine in France as February at Nice. The summer is not so hot as might be expected. The thermometer never rises more than 24° above temperate in the shade; and there is always an agreeable sea breeze from ten in the morning till sun-set, when the land breeze comes on. There are three chains of graduated mountains, the last of which confound their summits with the Alps; and to this triple rampart is owing the mild temperature. The cultivation of the ground is rich. There are alternately rows of corn and beans, separated by vines attached to different fruit-trees, the almond and the fig; so that the earth being incessantly cultivated, and covered with trees, olive, orange, cedar, pomegranate, laurel, and myrtle causes the constant appearance of spring, and forms a fine contrast with the summits of the Alps in the back-ground covered with snow. This fine country was over-run by the French in 1792-3, and annexed to their republic in 1796.

(3.) NICE, an ancient, handsome, and considerable city of the French empire, in the dep. of the Maritime Alps, on the confines of France and Italy, late capital of the county so named, with a strong citadel. It had a bishop's see and a senate, and was a kind of a democracy. It was several times taken by the French, particularly in 1744, but restored after the treaty of Aix-la-Chapelle. It is situated on the sea-shore, and is backed by a rock entirely insulated, on which was formerly a castle, much esteemed for its position; but it was destroyed in 1706 by Mareschal Berwick, the garrison being too thin to defend the extent of the works. There is a distinction between the old and the new town; this last is regular, the houses are well built, and the streets are wide. Its position is by the side of the sea, and it is terminated, on one side by a charming terrace, which serves for a promenade. The town has three suburbs. 1st, That of St John, which conducts to Cimier, about three leagues N. from Nice, &c. The promenades this way are very delightful, and may be enjoyed in a carriage. 2d, That of the Poudriere. 3d, That of the *Croix de Marbre*, or Marble Cross. There are in the town very large and commodious houses; and a new road from the town to the port is cut through that part of the rock which inclined toward the sea. The situation is delightful, and warmest in winter, being entirely covered from the N. wind, and quite open to the south. This city was taken by the French under Gen. Anselm and Adm. Truguet, on Sept. 19th, 1792, the Piedmontese garrison evacuating it on their approach.

(4.) NICE. See NIZZA, N° 1.

(5.) * NICE. *adj.* [*nese*, Saxon, soft.] 1. Accurate in judgment to minute exactness; superfluously exact. It is often used to express a culpable delicacy.—Such a man was Agralus, as hardly the *nicest* eye can find a spot in. *Sidney.*

Nor be so *nice* in taste myself to know
If what I swallow be a thrush or no. *Dryd. Pers.*

Thus critics, of less judgment than caprice,
Curious, not knowing, not exact, but *nice*,
Form short ideas, and offend in arts,
As most in manners, by a love to parts. *Pope.*

Our author, happy in a judge so *nice*,
Produc'd his play, and begg'd the knight's advice. *Pope.*

—She is so *nice* and critical in her judgment, so sensible of the smallest error, that the maid is often forced to dress and undress her daughters three or four times a-day. *Law.* 2. Delicate; scrupulously and minutely cautious.—

The letter was not *nice*, but full of charge
Of dear import. *Shak. Romeo and Juliet.*

Dear love! continue *nice* and chaste;
For if you yield, you do me wrong. *Donne.*

Of honour men at first, like women *nice*,
Raise maiden scruples. *E. Halifax.*

—Having been compiled by Gratian, in an ignorant age, we ought not to be too *nice* in examining it. *Baker.* 3. Fastidious; squeamish.—

To taste,
Think not I shall be *nice*. *Milton.*

4. Easily injured; delicate.—

With how much ease is a young muse betray'd?
How *nice* the reputation of the maid? *Roscom.*

5. Formed with minute exactness.—

Indulge me but in love, my other passions
Shall rise and fall by virtue's *nicest* rules.
Addison's Cato.

6. Requiring scrupulous exactness.—Supposing an injury done, it is a *nice* point to proportion the reparation to the degree of the indignity. *L'Estr.* —My progress in making this *nice* and troublesome experiment, I have set down more at large. *Newton's Opt.* 7. Refined.

A *nice* and subtle happiness I see
Thou to thyself proposest, in the choice
Of thy associates, Adam. *Milton.*

8. Having lucky hits. This signification is not in use.—

When my hours
Were *nice* and lucky, men did ransom lives

Of

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Of me for jests. *Shak. Ant. and Cleop.*

9. *To make* NICE. To be scrupulous: perhaps from *faire le delicat.*—

He that stands upon a slipp'ry place,
Makes nice of no vile hold to stay him up. *Shak.*

NICEA, a town of European Turkey, in the Morea; 18 miles ENE. of Misitra.

* NICELY. *adv.* [from *nice.*] 1. Accurately; scrupulously.—

Knaves in this plainness
Harbour more craft, and more corrupter ends,
Than twenty silky ducking observants,
That stretch their duties *nicely.* *K. Lear.*

What mean those ladies which, as though
They were to take a clock to pieces, go
So *nicely* about the bride? *Donne.*

—He ought to study the grammar of his own tongue, that he may understand his own country speech *nicely.* *Locke.*—The next thing of which the doses ought to be *nicely* determined, are opiates. *Arbuthnot on Coins.*—

At *nicely* carving shew thy wit,
But ne'er presume to eat a bit. *Swift's Misc.*

2. Delicately.—The inconveniences attending the best of governments, we quickly feel, and are *nicely* sensible of the share that we bear in them. *Atterbury.*

(1.) NICENE, *adj.* of or belonging to Nice.

(2.) *The* NICENE CREED was composed and established, as a proper summary of the Christian faith, by the council at Nice in 325, against the Arians.—It is also called the *Constantinopolitan Creed,* because it was confirmed, with some few alterations, by the council of Constantinople in 381. See CREED, § 4.

* NICENESS. *n. s.* [from *nice.*] 1. Accuracy; minute exactness.—

Where's now that labour'd *niceness* in thy dress,
And all those arts that did the spark express?
Dryden.

2. Superfluous delicacy or exactness.—A strange *niceness* were it in me to refrain that from the ears of a person representing so much worthiness. *Sidney.*—

Only some little boats from Gaul, that did her feed
With trifles, which she took for *niceness* more than need. *Drayton.*

Unlike the *niceness* of our modern dames,
Affected nymphs, with new affected names. *Dryd.*

Nor place them where
Roast crabs offend the *niceness* of their nose.
Dryden.

(1.) NICEPHORUS I. emperor of the East, was chancellor of the empire under the empress Irene, whom he dethroned and banished to Mitylene. He was killed in battle by the Bulgarians, A. D. 811. See CONSTANTINOPLE, § 10.

(2.) NICEPHORUS II. from his popularity, was raised to the imperial throne in 963; and married the widow of his predecessor, Romanus. He drove the Saracens out of a great part of Asia, but proved a tyrant to his subjects; and was assassinated by John Zimisces and other conspirators, in 969.

(3.) NICEPHORUS III. was made emperor by the army which he commanded in 1077; but was dethroned by his general Alexius Comnenus, in 1080, and sent to a convent, where he died soon after. See CONSTANTINOPLE, § 11.

(4.) NICEPHORUS, Calistus, a Greek historian, who flourished in the 14th century under the emperor Andronicus II.; wrote an ecclesiastical history, in 23 books, 18 of which are still extant, containing the transactions of the church from the birth of Christ to the death of Phocas in 610. We have nothing else but the arguments of the other five books, from the commencement of the reign of Heraclius to the end of that of Leo the philosopher, who died in 911. Nicephorus dedicated his history to Andronicus II. It was translated into Latin by John Langius, and has gone through several editions, the best of which is that of Paris, in 1630.

(5.) NICEPHORUS, Gregory, a Greek historian, who was born about the close of the 13th century, and flourished in the 14th, under the emperors Andronicus II. and III. John Palæologus, and John Cantacuzenus. He was a great favourite of Andronicus II. who made him librarian of the church of Constantinople, and sent him ambassador to the prince of Servia. He accompanied this emperor in his misfortunes, and assisted at his death; after which he repaired to the court of Andronicus III. where he was well received; and by his influence over the Greeks, that church refused entering into any conference with the legates of Pope John XXII. But in the dispute which arose between Barlaam and Palamos, taking the part of the former, he maintained it zealously in the council held at Constantinople in 1351, for which he was cast into prison, and continued there till the return of John Palæologus, who released him; after which he held a disputation with Palamos before that emperor. He compiled a history, which in 11 books contains all that passed from 1204, when Constantinople was taken by the French, to the death of Andronicus III. in 1341.—The best edition is that of the Louvre, in Greek and Latin, in 1702.

(6.) NICEPHORUS BLEMMIDAS, a priest and monk of Mount Athos, flourished in the 13th century. He refused the patriarchate of Constantinople, being favourable to the Latin church, and much inclined to peace. In this spirit he composed two treatises concerning *The Procession of the Holy Ghost;* one addressed to James patriarch of Bulgaria, and the other to the emperor Theodore Lascaris. In both these he refutes those who deny that the Holy Ghost proceeds from the Father and the Son. These two tracts are printed in Greek and Latin by Allatius, who has also given us a letter written by Blemmidas on his expelling from the church of her convent Marchesinos, mistress of the emperor John Ducas. There are several others of his pieces in the Vatican library.

(1.) NICERON, John Francis, was born at Paris in 1613. Having finished his academical studies with success, he took the habit of the Minims in 1632, his paternal uncle being a Minim. His taste for mathematics appeared early; and he devoted thereto all the time he could spare, after he had completed his studies in theology. He confined himself particularly to optics; and there remain still, in several houses wherein he

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dwelt at Paris, ſome excellent performances, which diſcover his ſkill in this ſcience, and make us ſurpriſed that he proceeded ſo far as he did, in the midſt of his various occupations and travels, during the ſhort ſpace of time which he lived. He tells us in the preface to his *Thaumaturgus Opticus*, that he went twice to Rome; and that, on his return home, he was appointed teacher of theology. He afterwards accompanied F. De la Noue, vicar-general of the order, in his viſitation of the convents throughout all France. He died at Aix in Provence, Sept. 22, 1646, aged 33. He was intimate with Des Cartes. His other writings are, *L'Interpetation des Chiffres*; and *La Perſpective Curieuſe*.

(2.) NICERON, John Peter, ſo much celebrated on account of his *Memoirs of Men illuſtrious in the Republic of Letters*, was born at Paris, March 11, 1685. He was of an ancient and noble family, who were in very high repute about 1540. He ſtudied with ſucceſs in the Mazarine college at Paris, and afterwards at the college Du Pleſſis. Reſolving to forſake the world, he conſulted one of his uncles, who belonged to the order of Barnabite Jeſuits, and introduced him as a probationer to that ſociety at Paris. He was received in 1702, took the habit in 1703, and his vows in 1704, at the age of 19. After this he was ſent to Montarges, to ſtudy philoſophy and theology; thence to Loches in Touraine, to teach thoſe ſciences. He received the prieſthood at Poitiers in 1708. Not being of age to aſſume this order, a diſpenſation, on account of his uncommon piety, was obtained in his favour. The college of Montarges having recalled him, he was their profeſſor of rhetoric two years, and of philoſophy four. In ſpite of all theſe avocations, he preached often in moſt of the churches in the province, as well as in thoſe of Paris.—In 1716, his ſuperiors invited him to that city. He underſtood both ancient and modern languages. He died after a ſhort illneſs, July 8, 1738, at the age of 53. His works are, 1. *Le grand Febrifuge*; or, a Diſſertation, to prove that common water is the beſt remedy in fevers, and even in the plague; tranſlated from the Engliſh of John Hancock, miniſter of St Margaret's, London, in 12mo, 1720. It went through 3 editions; the laſt came out in 1730, in 2 vols. 12mo, entitled, *A Treatiſe on Common Water*; Paris. 2. *The Voyages of John Quvington to Surat, and divers parts of Aſia and Africa*, containing the hiſtory of the revolution in the kingdom of Golconda, and ſome obſervations upon ſilk worms; Paris, 1725, 2 vols. 12mo. 3. *The Converſion of England to Chriſtianity, compared with its pretended Reformation*; Paris, 1729, 8vo. 4. *The Natural Hiſtory of the Earth*, tranſlated from the Engliſh of Mr Woodward, by Dr Nogues, with an anſwer to the objections of Dr Camerarius: containing alſo ſeveral letters written on the ſame ſubject, and a methodical diſtribution of foſſils, tranſlated from the Engliſh by Niceron; Paris, 1735, 4to. 5. *Memoirs of Men illuſtrious in the Republic of Letters*, with a critical account of their works; Paris, 12mo. The firſt volume of this great work appeared in 1727; the others were given to the public in ſucceſſion, as far as the 39th, which appeared in 1738. The 40th volume was publiſhed after the death of the author, in 1739.

(1.) NICETAS, David, a Greek hiſtorian, a native of Paphlagonia, who lived about the end of the 9th century. He wrote *The Life of St Ignatius*, patriarch of Conſtantinople, which was tranſlated into Latin by Frederic Mutius, biſhop of Termoli; alſo ſeveral panegyrics on the apoſtles and ſaints, inſerted in the continuation of the *Bibliotheca Patrum* by Combefis.

(2.) NICETAS ARHOMINATES, a Greek hiſtorian of the 13th century, called alſo *Coniates*, being born at Chone, or Coloſſus, in Phrygia. He was employed in ſeveral conſiderable affairs at the court of Conſtantinople; and when that city was taken by the French in 1204, he withdrew with a young girl taken from the enemy, to Nice in Bithynia, where he married his captive, and died in 1206. He wrote a Hiſtory, or Annals, from the death of Alexius Comnenus in 1118, to that of Baldwin I. in 1205; of which work we have a Latin tranſlation by Jerome Wolfius, printed at Baſil in 1557; and in the body of the Byzantine Hiſtorians, printed in France at the Louvre.

(3.) NICETAS SERRON, deacon of the church of Conſtantinople, contemporary with Theophylact in the 11th century, and afterwards biſhop of Heraclea, wrote a *Catena upon the book of Job*, compiled from paſſages of ſeveral of the fathers, which was printed at London in folio, 1637. We have alſo, by the ſame writer, ſeveral *catenæ* upon the Pſalms and Canticles, Baſil, 1552; with a Commentary on the poems of Gregory Nazianzen.

* NICETY. *n. ſ.* [from *nice*.] 1. Minute accuracy of thought.—Nor was this *nicety* of his judgment confined only to literature, but was the ſame in all other parts of art. *Prior*. 2. Accurate performance or obſervance.—As for the workmanſhip of the old Roman pillars, the ancients have not kept to the *nicety* of proportion and the rules of art ſo much as the moderns. *Addiſon*. 3. Faſtidious delicacy; ſqueamiſhneſs.—

He them with ſpeeches meet
Does fair entreat; no courting *nicety*,
But ſimple, true, and eke unfeigned ſweet.
Spenſer.

So love doth loath diſdainful *nicety*. *Spenſer*. 4. Minute obſervation; punctilious diſcrimination; ſubtilty.—If reputation attend theſe conqueſts, which depend on the fineneſs and *niceties* of words, it is no wonder if the wit of men, ſo employed, ſhould perplex and ſubtilize the ſignification of ſounds. *Locke*.—His concluſions are not built upon any *niceties*, or ſolitary and uncommon appearances. *Woodward*. 5. Delicate management; cautious treatment.—

Love ſuch *nicety* requires,
One blaſt will put out all his fires. *Swift*.

6. Effeminate ſoftneſs. 7. Niceties, in the plural, is generally applied to dainties or delicacies in eating.

NICEY, a town of France, in the dep. of Yonne; 15 miles E. of Tonnere.

NICHABURG, a town of Perſia, in Choraſan, famous for a mine of Turquoiſe ſtones; 30 miles S. of Meſched.

(1.) * NICHAR. *n. ſ.* A plant. *Miller*.

(2.) NICHAR.

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(2.) NICHAR. See GUILANDINA.

(1.) * NICHE. *n. f.* [French.] A hollow in which a ſtatue may be placed.—*Niches*, containing figures of white ſtone or marble, ſhould not be coloured in their concavity too black. *Watton.*

They not from temples, nor from Gods refrain,
But the poor lares from the *niches* ſeize. *Dryd.*
On the ſouth a long majeſtic race
Of Egypt's prieſts, the gilded *niches* grace. *Pope.*

—The heirs to titles and large eſtates are well enough qualified to read pamphlets againſt religion and high-flying; whereby they fill their *niches*. *Swift.*

(2.) NICHE is derived from the Italian *nechia*; a *ſea-ſhell*; as the ſtatue is incloſed as in a ſhell, or perhaps on account of the ſhell wherewith the tops of ſome niches are adorned.

(1.) NICHOLAS, an iſland on the N. coaſt of Cuba. Lon. 79. 40. W. Lat. 23. 15. N.

(1.) NICHOLAS, St. a town of France, in the dep. of the Meurthe, on the Meurthe, 5 miles SE. of Nancy, and 265 E. of Paris. Lon. 6. 25. E. Lat. 48. 29. N.

(3.) NICHOLAS, ST, a town of Kent, in the iſle of Thanet.

(4.) NICHOLAS, ST, a ſea port town of Ruſſia, at the mouth of the Dwina, on the coaſt of the White ſea, 6 miles S. of Archangel. Lon. 31. 0. E. Lat. 64. 0. N.

(5.) NICHOLAS, ST, a town of the Iſle of Wight in W. Medina.

(6.) NICHOLAS, ST, an iſland before the mouth of Plymouth harbour.

(7, 8.) NICHOLAS, ST, two villages of Yorkſhire: 1. near Richmond: 2. near York.

NICHOLLS, Dr Frank, an eminent phyſician, born in London in 1699. His father was a barriſter at law; and both his parents were of good families in Cornwall. After being educated at a private ſchool in the country, where his docility and ſweetneſs of temper endeared him equally to his maſter and ſchool-fellows, Frank was removed to Weſtminſter, and thence to Oxford, where he was admitted a commoner of Exeter college, under the tuition of Mr John Haviland, on March 4th 1714. There he made rapid progreſs in all the uſual academical ſtudies, particularly in natural philoſophy, anatomy and diſſections. Being choſen reader of anatomy in that univerſity, he employed his utmoſt attention to elevate and illuſtrate a ſcience which had there been long depreſſed and neglected; About this time he viſited the continent, and acquainted himſelf with opinions of foreign naturaliſts on this his favourite ſtudy. On his return to London he repeated his phyſiological lectures, which were much frequented. Soon after, his new and ſucceſsful treatment of the military fever, then very prevalent in the S. of England, added much to his reputation. In the beginning of 1728, he was choſen F. R. S. and in 1729, took the degree of M. D. at Oxford. Dr Nicholls was choſen a fellow of the college of phyſicians, London, June 26, 1732; and two years after, being choſen Gulſtonian reader of Pathology, he made the ſtructure of the heart, and the circulation of the blood, the ſubjects of his lectures. In 1736, at the requeſt of the preſident, he again read the Gulſtonian lectures on thoſe parts of the human body which ſerve for the ſecretion and diſcharge of the urine; and the cauſes, ſymptoms, and cure of the diſeaſes occaſioned by the ſtone. In 1739, he delivered the anniverſary Harveian oration. In 1743 he married Elizabeth, youngeſt daughter of the celebrated Dr Mead, by whom he had five children, of whom 2 ſons and a daughter ſurvived him. In 1748, he undertook the office of chirurgical lecturer, beginning with a learned and elegant diſſertation on the *Anima Medica*. About this time, on the death of Dr John Cunningham, one of the elects, Dr Abraham Hall was choſen to ſucceed him, in preference to our author, who was his ſenior, without any apparent reaſon. He immediately reſigned the office of chirurgical lecturer, and never afterwards attended the meetings, except when buſineſs of the utmoſt importance was in agitation. In 1751, he took ſome farther revenge in an anonymous pamphlet, entitled "The Petition of the Unborn Babes to the Cenſors of the Royal College of Phyſicians of London:" in which Dr Neſbit (*Pocus*), Dr Maule (*Maulus*), Dr Barrowby (*Barebone*), principally, and Sir William Brown, Sir Edward Hulſe, and the Scots incidentally, are the objects of his ſatire. In 1753, on the death of Sir Hans Sloane, Bart. in his 94th year, Dr Nicholls was appointed to ſucceed him as one of the king's phyſicians, and held that office till the death of his royal maſter in 1760, when this moſt ſkilful phyſician was ſuperſeded with the offer of a penſion, which he rejected. The cauſes, &c. of the uncommon diſorder of which the late king died, viz. a rupture of the right ventricle of the heart, our author explained in a letter to the earl of Macclesfield, F. R. S. publiſhed in the Philoſ. Tranſ. vol. I. In 1772, to a 2d edition of his treatiſe *De Anima Medica*, he added a diſſertation *De motu cordis et ſanguinis in homine nato et non nato*, inſcribed to his learned friend and coadjutor the late Dr Lawrence. Tired at length of London, and deſirous of ſuperintending the education of his ſon, he removed to Oxford. But when the ſtudy of the law recalled Mr Nicholls to London, he took a houſe at Epſom, where he paſſed the remainder of his life in a literary retirement, not inattentive to natural philoſophy, eſpecially the cultivation of grain, and the improvement of barren ſoils, and contemplating alſo with admiration the internal nature of plants, as taught by Linnæus. His conſtitution never was robuſt. In his youth, at Oxford, he was with difficulty recovered from a dangerous fever, and afterwards at London he had often been afflicted with a catarrh and aſthmatic cough, which, returning with great violence at the beginning of 1778, deprived the world of this valuable man on January 7th, in the 80th year of his age. Dr Lawrence, preſident of the college of phyſicians, who aſcribed all his medical knowledge to his precepts, and who, while he lived, loved him as a brother, printed an elegant Latin Life of Dr Nicholls, with his head prefixed, a ſtriking likeneſs.

NICHOLS, William, an Engliſh divine, ſon of John Nichols of Donnington, in Bucks, born in 1664. In 1679, he became a commoner of Magdalene Hall, Oxford, whence he removed to Wadham College, and took the degree of A. B. Nov.

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27,

27, 1683.—In Oct. 1684, he was admitted fellow of Merton College. In 1688 he took the degree of M. A. and about the same time being admitted into orders, he became chaplain to Ralph earl of Montague, and was in Sept. 1791, made rector of Selsey, near Chichester, in Sussex. He was admitted B. D. July 2, 1692; and D. D. Nov. 29, 1695. Though his time was wholly devoted to piety and study, and though he published in Latin and in English, no fewer than 19 works in defence of Christianity, and of the church of England, his merits were totally overlooked by the professed patrons of orthodoxy. He died in 1712. Of his numerous publications, those which are most generally known are, *A Conference with a Theist*, an excellent work, in five parts, and *A Comment on the Book of Common Prayer and Administration of the Sacraments*, &c. A volume of Letters in Latin between him and Jablonski, Ostervald, and Wetstein, &c. was presented, Oct. 28, 1712, by his widow to the Abp. of Canterbury; and are preserved among the valuable MSS. at Lambeth, N° 676.

(1.) NICIAS, a celebrated Athenian general, cotemporary with Alcibiades, who was his rival. (See ATTICA, § 13.) Being sent against Sicily, and not properly supported with supplies, he was obliged to surrender to the Sicilians, who put him to death; A. A. C. 413.

(2.) NICIAS, a celebrated painter of Athens, who flourished about A. A. C. 322, and was universally extolled for the great variety and noble choice of his subjects, the force and relievo of his figures, his skill in the distribution of the lights and shades, and his dexterity in representing all sorts of four-footed animals, beyond any master of his time. His most celebrated piece was that of Tartarus or Hell, as described by Homer, for which king Ptolemy I. offered him 60 talents, or 11,250l. which he refused, and generously presented it to his own country. He was much esteemed likewise by all his cotemporaries for his excellent talent in sculpture.

* NICK. *n. s.* [*nicke*, Teutonick, the twinkling of an eye,] 1. Exact point of time at which there is necessity or convenience.—That great instrument of state suffered the fatal thread to be spun out to that length for some politic respects, and then to cut it off in the very *nick*. *Howel.*—

So to the height and *nick* we up be wound,
No matter by what hand or trick. *Suckling.*

That trick,
Had it come in the *nick*.
Had touch'd us to the quick, } *Denham.*

Though dame fortune seem to smile,
And leer upon him for a while;
She'll after shew him in the *nick*
Of all his glories a dog trick. *Hudibras.*

And some with symbols, signs, and tricks,
Engraved in planetary *nicks*. *Hudibras.*

—This *nick* of time is the critical occasion for the gaining of a point. *L'Estrange.* 3. A notch cut in any thing, [corrupted from *nock* or *notch*.] 3. a score; a reckoning: from reknings kept anciently upon tallies or notched sticks.—Launce his man told me, he lov'd her art of all *nick*. *Shak.* 4. A winning throw. [*niche*, F. a ludicrous trick.]

Come, seven's the main,
Cries Ganymede; the usual trick
Seven, slur a fix, eleven a *nick*. *Prior.*

* *To* NICK. *v. a.* [from the noun.] 1. To hit; to touch luckily; to perform by some slight artifice used at the lucky moment.—

Is not the winding up of witness
A *nicking* more than half the business? *Hudib.*

—The just season of doing things must be *nicked*, and all accidents improved. *L'Estrange.*—Take away passion while it is predominant and afloat, and just in the critical height of it, *nick* it with some lucky or unlucky word. *South.* 2. To cut in nicks or notches.—

My master preaches patience, and the while
His man with scissars *nicks* him like a fool. *Shak.*

Breaks watchmen's heads, and chairmen's glasses,
And thence proceeds to *nicking* sashes. *Prior.*

3. To suit, as tallies cut in nicks.—Words *nicking* and resembling one another, are applicable to different significations. *Camden's Remarks.* 4. To defeat or cozen, as at dice; to disappoint by some trick or unexpected turn.—

The itch of his affection should not then
Have *nick'd* his captainship. *Shak.*

NICKAGACK, a town of Georgia, on the Tennessee. Lon. 85. 57. W. Lat. 33. 50. N.

NICKAR TREE. See Guilandina.

NICKEL. *n. s.* in chemistry, metallurgy, and mineralogy, a metal formerly classed among the semimetals. Several eminent chemists were long of opinion that it was a compound; and even Bergman himself conjectured that it was a modification of iron; but it is now universally ranked as a distinct metal. See CHEMISTRY, *Index*; METALLURGY, *Part* I. *Sect.* I; and MINERALOGY, *Part* II, *Chap.* VII. *Class* IV, *Order* IX, *Genus* I—III; and *Part.* III, *Chap.* IV. and V. "It had its name (says Sir T. Bergman), from this circumstance, that though it has the appearance of containing *copper*, not the smallest particle of that metal can be extracted from it, even by fire." It was first mentioned by N. Hiems, in 1694, in a book written in the Swedish language, concerning the discovery of ores and other mineral substances. It was supposed by Henckel to be a species of cobalt, or arsenic alloyed with copper. Cramer classed it with the arsenical or cupreous ores; though both they and all other chemists confess that they were never able to extract one particle of copper from it. Mr Cronstedt, in 1751 and 1754, showed by many accurate experiments that it contained a new semimetal. The solutions of nickel in all the acids are green. Lemon juice seems not to act at all upon nickel. All the acids are deeply tinged by dissolving nickel. Volatile alkali dissolves it, and the solution is of a blue colour; the fixed alkali dissolves it very sparingly, and forms a yellow solution. Nickel becomes the more difficult of fusion, in proportion to its purity, so that at last it requires nearly as great a heat for this purpose as malleable iron. It is easily melted with other metals, but its great scarcity has prevented this matter from being thoroughly investigated. When well freed from cobalt, it easily unites in equal proportions with silver, without any remarkable diminution of the whiteness or ductility of the latter. This mixture, fused with

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with borax, tinges it of an hyacinthine colour. Copper unites more ſlowly with depurated nickel, yielding a red and ductile metallic maſs, which tinges borax of a reddiſh hyacinthine colour. It produces only a brittle maſs with tin; in which reſpect it differs from cobalt. It could not be amalgamated with mercury by trituration. Nickel is conſtantly attracted by the magnet, and that not at all in proportion to the quantity of iron it contains; for the more it is purified from this metal, the more magnetical it becomes; and even acquires what iron does not, viz. the properties of a true loadſtone.

NICKENICK, a town of France, in the dep. of the Sarre, and ci-devant archbiſhopric of Treves; 12 miles W. of Coblentz.

NICKING OF HORSES. See FARRIERY, *Part* VI. *Sect.* V.

NICKLOBING, a town of Denmark, in N. Jutland, with a good harbour. Lon. 8. 52. E. Lat. 56. 54. N.

* NICKNAME. *n. ſ.* [*nom de nique*, French.] A name given in ſcoff or contempt; a term of deriſion; an opprobrious or contemptuous appellation. He is upbraidingly called a poet, as if it were a contemptible *nickname*. *Ben Jonſon*.—My mortal enemy hath not only falſely ſurmiſed me to be a feigned perſon, giving me *nicknames*, but alſo hath offered large ſums of money to corrupt the princes with whom I have been retained. *Bacon*.—So long as her tongue was at liberty, there was not a word got from her, but the ſame *nickname* in deriſion. *L'Eſtrange*.

* *To* NICKNAME. *v. a.* To call by an opprobrious appellation.—

You *nickname* virtue vice. *Shak.*

Leſs ſeem theſe facts which treaſons *nickname* force,

Than ſuch a fear'd ability for more. *Denham.*

NICKOWSE, or *Benkowſe*, a town of Algiers, with a garriſon, rampart, and 3 pieces of cannon. It is ſeated near the ruins of a large city, which had walls, columns, ciſterns, aqueducts, &c.; 60 miles SW. of Conſtantina.

NICOBAR ISLANDS, ſeveral iſlands in Aſia, lying at the entrance of the gulph of Bengal. The largeſt is about 40 miles long and 15 broad, and the inhabitants are ſaid to be a harmleſs ſort of people, ready to ſupply the ſhips that ſtop there with proviſions. The S. end of the Great Nicobar is by Captain Ritchie placed in 94° 23′ 30″. Lon. E. and Mr Rannel ſays that it is within 12° Lat. N. Of theſe iſlands very little is known in Europe. Of the northernmoſt called *Carnicobar*, we have indeed, in the Aſiatic Reſearches, Vol. II. ſome intereſting information reſpecting both the produce and natural hiſtory of the country, and the manners of its inhabitants. The author, Mr G. Hamilton, in his account of the iſland, ſays, "It is low, of a round figure, about 40 miles in circumference, and appears at a diſtance as if entirely covered with trees: though there are ſeveral well-cleared and delightful ſpots upon it. The ſoil is a black kind of clay, and marſhy. It produces in great abundance, and with little care, pine-apples, plantains, papayas, cocoa-nuts, and areca-nuts; excellent yams, and a root called *cachu*. The only quadrupeds are, hogs, dogs, large rats, and an animal of the lizard kind but large, called by the natives *tolonquis*; theſe frequently carry off fowls and chickens. The only kind of poultry are hens. There are ſnakes of many different kinds, whoſe bites are mortal. The timber is of many ſorts, in great plenty, and ſome of it remarkably large, affording excellent materials for building or repairing ſhips. The natives are low in ſtature, but well made, active and ſtrong; they are copper-coloured, and their features have a caſt of the Malay; quite the reverſe of elegant. The women are extremely ugly. The men cut their hair ſhort, and the women have their heads ſhaved quite bare, and wear no covering but a ſhort petticoat, made of a ſort of ruſh or dry graſs, which reaches half way down the thigh. This graſs is not interwoven, but hangs round the perſon ſomething like the thatching of a houſe. Such of them as have received preſents of cloth petticoats from the ſhips commonly tie them round immediately under the arms. The men wear nothing but a narrow ſtrip of cloth about the middle, in which they wrap up their privities very tight. The ears of both ſexes are pierced when young; and by ſqueezing into the holes large plugs of wood, or hanging heavy weights of ſhells, they render them wide, and diſagreeable to look at. They are naturally good humoured, and fond of ſitting at table with Europeans, where they eat every thing that is ſet before them, moſt enormouſly. They do not care for wine, but will drink bumpers of *arak* as long as they can ſee. A great part of their time is ſpent in feaſting and dancing. When a feaſt is held at any village, every one that chooſes goes uninvited. At theſe feaſts they eat immenſe quantities of pork, which is their favourite food. Their hogs are remarkably fat, being fed upon the cocoa-nut kernel and ſea-water; as indeed all their domeſtic animals, fowls, dogs, &c. are. They have likewiſe plenty of ſmall ſea-fiſh which they ſtrike very dexterouſly with lances, wading into the ſea about knee-deep. They are ſure of killing a very ſmall fiſh at 10 or 12 yards diſtance. They eat the pork almoſt raw, giving it only a haſty grilling over a quick fire. They roaſt a fowl, by running a piece of wood through it, by way of ſpit, and holding it over a briſk fire until the feathers are burnt off, when it is ready for eating, in their taſte. They never drink water; only cocoa-nut milk, and a liquor called *foura*, which oozes from the cocoa-nut tree after cutting off the young ſprouts or flowers. This they ſuffer to ferment before it is uſed, and then it is intoxicating; to which quality they add much by their method of drinking it, by ſucking it ſlowly through a ſmall ſtraw. After eating, the young men and women, who are fancifully dreſſed with leaves, go to dancing, and the old people ſurround them ſmoking tobacco and drinking *foura*. The dancers, while performing, ſing ſome of their tunes, which are far from wanting harmony, and to which they keep exact time. Of muſical inſtruments they have only one kind, viz. a hollow bamboo, about 2½ feet long and 3 inches in diameter, along the outſide of which is ſtretched from end to end a ſingle ſtring made of the threads of a ſplit cane, and the place under the ſtring is hollowed

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hollowed a little to prevent it from touching. This inſtrument is played upon in the ſame manner as a guitar. It is capable of producing few notes; but the performer makes it ſpeak harmoniouſly, and generally accompanies it with the voice. Their houſes are generally built upon the beach, in villages of 15 or 20 houſes each: each houſe contains a family of about 20 perſons. They are raiſed upon wooden pillars about 10 feet from the ground; they are round, and, having no windows, are like bee-hives, covered with thatch. The entry is through a trap-door below, where the family mount by a ladder, which is drawn up at night. This manner of building is intended to ſecure the houſes from ſnakes and rats; and for that purpoſe the pillars are bound round with a ſmooth kind of leaf, which prevents animals from mounting; and each pillar has a broad round flat piece of wood near the top of it, the projecting of which prevents the further progreſs of ſuch vermin as have paſſed the leaf. The flooring is made with thin ſtripes of bamboos, laid at ſuch diſtances as to leave free admiſſion for light and air; and the inſide is neatly finiſhed and decorated with fiſhing lances, nets, &c. The art of making cloth is unknown to the inhabitants; but from the ſhips that come to trade in cocoa-nuts, they purchaſe a much larger quantity of cloth than is conſumed upon their own iſland. This is intended for the Choury market. Choury is a ſmall iſland S. of theirs, to which a large fleet of their boats ſails every year about November, to exchange cloth for canoes; for they cannot make theſe themſelves. This voyage they perform by the help of the ſun and ſtars. They have two remarkable qualities. One is their entire neglect of compliment and ceremony; and the other, their averſion to diſhoneſty. A Carnicobarian travelling to a diſtant village upon buſineſs or amuſement, paſſes through many towns in his way without ſpeaking to any one; if he is hungry or tired, he goes into the neareſt houſe, and helps himſelf to what he wants, and ſits till he is reſted, without taking the ſmalleſt notice of any of the family, unleſs he has buſineſs or news to communicate. Theft or robery is ſo very rare amongſt them, that a man going out of his houſe never takes away his ladder or ſhuts his door, but leaves it open for any body to enter that pleaſes, without the leaſt apprehenſion of having any thing ſtolen. Their intercourſe with ſtrangers is ſo frequent, that they have acquired in general the barbarous Portugueſe ſo common over India; their own language has a ſound quite different from moſt others, their words being pronounced with a kind of ſtop, or catch in the throat, at every ſyllable. It is ſaid by Mr Hamilton, that they have no notion of a God, but they believe firmly in the devil, and worſhip him from fear. In every village there is a high pole erected with long ſtrings of ground rattans hanging from it, which, it is ſaid, has the virtue to keep him at a diſtance. When they ſee any ſigns of an approaching ſtorm, they imagine that the devil intends them a viſit, upon which many ſuperſtitious ceremonies are performed. The people of every village march round their own boundaries, and fix up at different diſtances ſmall ſticks ſplit at the top, into which ſplit they put a piece of cocoa-nut, a wiſp of tobacco, and the leaf of a certain plant: either as a peace-offering to the devil, or a ſcarecrow to frighten him away. When a man dies, all his live ſtock, cloth, hatchets, fiſhing-lances, and every moveable he poſſeſſed, is buried with him, and his death is mourned by the whole village. In one view this is an excellent cuſtom, as it prevents all diſputes about the property of the deceaſed. His wife muſt conform to cuſtom by having a joint cut off from one of her fingers; and if ſhe refuſes this, ſhe muſt have a deep notch cut in one of the pillars of her houſe. "I was once preſent, (ſays Mr Hamilton,) at the funeral of an old woman. When we went into the houſe which had belonged to the deceaſed, we found it full of her female relations; ſome of them were employed in wrapping up the corpſe in leaves and cloth, and others tearing to pieces all the cloth which had belonged to her. In another houſe hard by, the men of the village, with many others from the neighbouring towns, were fitting drinking *foura* and ſmoking tobacco. In the mean time two ſtout young fellows were buſy digging a grave in the ſand near the houſe. When the women had done with the corpſe, they ſet up a moſt hideous howl, upon which the people began to aſſemble round the grave, and 4 men went up into the houſe to bring down the body; in doing this they were much interrupted by a young man, ſon to the deceaſed, who endeavoured with all his might to prevent them, but finding it in vain, he clung round the body, and was carried to the grave along with it: there, after a violent ſtruggle, he was turned away and conducted back to the houſe. The corpſe being now put into the grave, and the faſhings which bound the legs and arms cut, all the live-ſtock which had been the property of the deceaſed, conſiſting of about 6 hogs, and 6 fowls, were killed, and flung in above it: a man then approached with a bunch of leaves ſtuck upon the end of a pole, which he ſwept two or three times gently along the corpſe, and then the grave was filled up. During the ceremony, the women continued to make the moſt horrible vocal concert imaginable: the men ſaid nothing. A few days afterwards, a kind of monument was erected over the grave, with a pole upon it, to which long ſtripes of cloth of different colours were hung. Polygamy is not known among them: and their puniſhment of adultery is not leſs ſevere than effectual. They cut, from the man's offending member, a piece of the foreſkin proportioned to the frequent commiſſion or enormity of the crime. There ſeems to ſubſiſt among them a perfect equality. A few perſons, from their age, have a little more reſpect paid to them; but there is no appearance of authority one over another. Their ſociety ſeems bound rather by mutual obligations continually conferred and received; the ſimpleſt and beſt of all ties."

NICODEMUS, a diſciple of Jeſus Chriſt, a Jew by nation, a member of the Sanhedrim, and by ſect a Phariſee. The ſcripture calls him a ruler of the Jews, and our Saviour gives him the title of a maſter of Iſrael. His private viſit to our Lord by night; his intereſting converſation with him upon regeneration; his judicious re-

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mark to the Jewish Sanhedrim, that the law condemns no man unheard; and his boldness at last in openly avowing himself a disciple of Jesus, when almost all the rest had forsaken him, and joining with Joseph of Arimathea in paying the last duties of respect to his body, are recorded in John iii. 1—21; viii. 50; and xix. 39, 40. It is said that Nicodemus received baptism from the disciples of Christ; and that the Jews, hearing of this, deposed him from his dignity of senator, excommunicated him, and banished him from Jerusalem: but that Gamaliel who was his cousin-german, took him to his country house, and maintained him till his death, when he had him buried honourably near St Stephen. There is extant an apocryphal gospel under the name of Nicodemus, which in some MSS. bears the title of the *Acts of Pilate*.

NICOLAITANS, in church history, Christian heretics who are said to have assumed this name from NICOLAS of Antioch; whose zeal and devotion recommended him to the church of Jerusalem, to be chosen one of the first deacons. Their infamous practices were expressly condemned by the Spirit of God himself, Rev. ii. 6. Their opinions and actions were highly extravagant and criminal. They allowed a community of wives, and made no distinction between ordinary meats and those offered to idols. According to Eusebius, they subsisted but a short time; but Tertullian says, that they only changed their name, and that their heresies passed into the sect of the CAINITES.

(1.) NICOLAS, one of the first 7 deacons in the Christian church, a native of Antioch, a proselyte to the Jewish religion, and a convert to Christianity. He is generally supposed to have been the founder of the heretical sect of the Nicolaitans; but many of the primitive writers are of opinion, that he was rather, by some imprudence, the *occasion*, than the author of that immoral heresy. Some even say, that the founder of that sect was quite a different person.

(2—6.) NICOLAS, the name of 5 popes of Rome. Of these

NICOLAS IV. was general of the Friars Minor, and was elected pope in 1288, on the death of Honorius IV. He attempted to excite a new croisade, but failed. He wrote some commentaries on the Scriptures, and on the sentences of Peter the Lombard.

NICOLAS V. Card. Bp. of Bologna, was chosen pope after Eugene IV. He restored peace to the church and to Europe; on which account he celebrated a grand jubilee at Rome in 1450. But the misfortunes of the Christians in the East affected him so much, that he died of a broken heart in 1455.

(7.) NICOLAS, ST, an island of the Atlantic Ocean, and one of the most considerable of those of Cape Verde, lying between Santa Lucia and St Jago. It is of a triangular figure, and about 15 miles in length. The land is stony, mountainous, and barren; but there are many flocks of goats in a valley inhabited by the Portuguese. Lon. 33. 35. W. Lat. 17. 0. N.

NICOLAU, a town of Silesia, in Ratibor.

NICOLAYKEN, a town of Prussia.

(1.) NICOLE, Claude, a French advocate and poet, of a very conspicuous family, born in 1611. He became king's counsellor, and died in 1685. He published a collection of poems, in 2 vols 4to, 1660.

(2.) NICOLE, John, another French advocate, was cousin to the preceding, born in 1600, whose speeches were remarkable for quotations from poets and romantic writers. He died at Chartres, in 1678.

(3.) NICOLE, Peter, son of John (N° 2.) was one of the finest writers in Europe, and was born at Chartres in 1625. He adhered to the Jansenists; and joined in the composition of several works with Mr Arnauld, whose faithful companion he was during the 10 or 12 years of his retirement. He gave a Latin translation of Pascal's *Provinciales*, and added a commentary to them. One of his finest works is his *Essais de Morale*. He wrote very subtilely against the Protestants. His treatise on the unity of the church is esteemed a masterly piece. He died at Paris in 1695, a few days after the publication of his treatise concerning the Quietists. He was well skilled in polite literature. To him is ascribed a collection of Latin epigrams, and of Greek, Spanish, and Italian sentences, which has a learned preface, and has gone through several editions.

(4.) NICOLE, Francis, a celebrated French mathematician, born at Paris, 23d Dec. 1683. Showing early signs of a genius for mathematics, M. Montmort undertook to educate him, and soon instructed him in the higher geometry. He first attracted the public attention, by detecting the falsehood of a boasted quadrature of the circle. One M. Mathulon thought himself so certain that he had discovered the quadrature, that he deposited, in the hand of a notary public at Lyons, 3000 livres, to be paid to any man, who should prove the falsity of his solution;—the question to be decided by the academy of sciences. Nicole accepted the challenge, exposed the paralogism, and the academy decided, that Nicole had clearly proved that the rectilineal figure, which Mathulon had given as *equal* to the circle, was not only *unequal* to it, but that it was even greater than the polygon of 32 sides circumscribed about the circle. Nicole gave the 3000 livres to the public hospital at Lyon's. The academy appointed him eleve mechanician 12th March, 1707; adjunct in 1716; associate in 1718, and pensioner in 1724, which he enjoyed till he died, on the 18th Jan. 1758, in his 75th year. He was author of 26 valuable papers, inserted in the memoirs of the academy, between 1707 and 1747; which are particularly enumerated in Dr Hutton's *Mathematical Dictionary*.

NICOLO, ST, an island of Maritime Austria, the most considerable, strongest, and best peopled of the isles of Tremeti, in the gulf of Venice, E. of St Domino, and S. of Caparata. It has a harbour defended by several towers; and a fortress, in which is an abbey, with a handsome church. Lon. 15. 37. E. Lat. 42. 7. N.

NICOLSBURG, a town of Moravia, in Brunn, often taken during the wars of Bohemia; 118 miles SE. of Prague.

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NICOLSON, William, D. D. a learned Engliſh prelate, born at Orton in Cumberland, in 1655, and educated at Oxford. He became fellow in 1679; archdeacon of Carliſle in 1681, D. D. in 1702, and biſhop of Londonderry in 1717. In 1727 he was appointed Abp. of Caſhell, but died at Derry before he could take poſſeſſion of this dignity. He was a learned antiquary, and publiſhed ſeveral works; particularly the *Engliſh Hiſtorical Library* in 1714, fol.

NICOLSTADT, a town of Silefia in Lignitz, 9 miles SE. of Lignitz.

(1.) NICOMEDES, a geometrician, famous on account of the invention of the curve called *conchoid*. See CONCHOID. It appears that he lived ſoon after Eratoſthenes, for he rallied that philoſopher on the mechaniſm of his meſolable. Geminus, who lived in the 2d century before Jeſus Chriſt, has written on the conchoid, though Nicomedes was always eſteemed the inventor. Thoſe who place him four or five centuries after Jeſus Chriſt muſt be ignorant of theſe facts, by which we are enabled to aſcertain pretty nearly the time in which he lived.

(2—5.) NICOMEDES, the name of four kings of ancient Bithynia. See BITHYNIA.

NICOMEDES I. had no ſooner taken poſſeſſion of his father's throne, A. A. C. 270, than he cauſed two of his brothers to be put to death. The youngeſt, ZIBOETAS, having ſaved himſelf by timely flight, ſeized on the coaſt of Bithynia, then known by the names of *Thracia*, *Thyniccia*, and *Thracia Aſiatica*, and there maintained a long war with his brother. Nicomedes being informed that Antiochus Soter, king of Syria, was preparing to attack him at the ſame time, called in the Gauls to his aſſiſtance; and on this occaſion that people firſt paſſed into Aſia.—Nicomedes, having with their aſſiſtance repulſed Antiochus, overcome his brother, and acquired the poſſeſſion of all his father's dominions, beſtowed upon them that part of Aſia Minor which from them was called GALLO-GRÆCIA, and GALATIA. He enlarged and adorned the city of Aſtacus, which he called *Nicomedia*. He had two wives, and by one of them was perſuaded to leave his kingdom to her ſon, in preference to his elder brothers.

NICOMEDES II. the grandſon of the former, began his reign like him, by ſacrificing his brothers to his jealouſy, after having waded to the throne in the blood of Pruſias his father. He aſſumed the name of *Epiphanes* or *the Illuſtrious*, though he performed nothing worthy of this title, or even of notice, during the whole time of his long reign. He was ſucceeded by his ſon,—

NICOMEDES III. ſurnamed by antiphraſis *Philopater*, becauſe he had murdered his father to get poſſeſſion of his crown. Having entered into alliance with Mithridates the Great, king of Pontus, he invaded Paphlagonia; and having ſeized on that country, he tried likewiſe to make himſelf maſter of Cappadocia. This country, however, was then ſubject to his powerful ally; who thereupon marching into Bithynia at the head of an army, drove Nicomedes from the throne, and raiſed his brother Socrates to it. The dethroned prince had recourſe to the Romans, who expelled the uſurper, and reſtored him to his hereditary dominions. For this favour they preſſed him, and at length prevailed upon him, contrary to his own inclination and the opinion of his friends, to make inroads into the territories of Mithridates, with whom Rome wanted a ſubject of diſpute. The king of Pontus bore for ſome time the devaſtations committed by Nicomedes with great patience, that he might not ſeem to be the aggreſſor; but at laſt he routed his army on the banks of the Amnius, drove him a ſecond time from his dominions, and obliged him to ſeek for ſhelter in Paphlagonia, where he led a private life till the time of Sylla, who replaced him on the throne. He was ſucceeded by his ſon,—

NICOMEDES IV. who performed nothing worth tranſmitting to poſterity. As he died without iſſue male, he left his kingdom by his laſt will to the Romans. Salluſt tells us, that Nicomedes left a ſon named *Muſa* or *Myſa*; and introduces Mithridates as complaining of the Romans to Arſaces king of Parthia, for ſeizing the kingdom of Bithynia, and excluding the ſon of a prince who had always ſhown himſelf a ſteady friend to their republic. But this Muſa was the daughter and not the ſon of Nicomedes, as we are told by Suetonius, Velleius Paterculus, and Appian. Upon the death of her father ſhe claimed the kingdom of Bithynia for her ſon, as the next male heir to the crown; but without ſucceſs; no motives of juſtice being of ſuch weight with the ambitious Romans as to make them part with a kingdom.

NICOMEDIA, in ancient geography, the metropolis of Bithynia, built by Nicomedes I. Situated on a point of the Sinus Aſtacenus, (*Pliny*); furnamed the *Beautiful* (*Athenæus*); the largeſt city of Bithynia, (*Pauſanias*), formerly called *Aſtacus*. But Pliny diſtinguiſhes Aſtacum and Nicomedia as different cities. Nicomedia was very famous, not only under its own kings, but under the Romans: it was the royal reſidence of Dioclefian, and of Conſtantine while Conſtantinople was building. It is now called *Iſchmitch*, or *Sehmit*. See SCHMIT. Lon. 29. 30. E. Lat. 40. 30. N.

NICON, a native of Ruſſia, born in 1613, in a village of the government of Niſhnei Novogorod, of obſcure parents. He was appointed to the office of patriarch in 1652, and unjuſtly depoſed in 1666. He died in 1681, aged 66.

NICOP, a town of European Turkey, in Bulgaria, 32 miles WNW. of Ternova.

(1.) NICOPOLI, or GLANISH, a town of Armenia, built by Pompey the Great; 15 miles S. of Erzerum, according to Mr Cruttwell, but no leſs than 265 according to Dr Brookes and J. Walker. Lon. 37. 55. E. Lat. 38. 13. N.

(2.) NICOPOLI, a town of European Turkey, in Bulgaria, famous for being the place where the firſt battle was fought between the Turks under Bajazet I. and the Chriſtians under the emperor Sigiſmund, in 1396; when the latter were defeated with the loſs of 20,000 men. It is ſeated on the Danube, 130 miles NW. of Adrianople. Lon. 25. 33. E. Lat. 43. 46. N.

(1.) NICOSIA, the capital of the iſland of CYPRUS, where a Turkiſh baſhaw reſides. It is delightfully ſituated between the mountains of Olympus and a chain of others; and was formerly

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merly well fortified by the Venetians, but the works are now in ruins. It is about 31 miles in circumference, and there are plantations of olives, almonds, lemons, oranges, mulberries, and cypreſs trees, interſperſed among the houſes, which give the town a delightful appearance. The church of Sancta Sophia is an old Gothic ſtructure, which the Turks have turned into a moſque, and deſtroyed the ornaments. It is 100 miles W. of Tripoli, and 160 SW. of Aleppo. Lon. 34. 45. E. Lat. 34. 54. N.

(2.) NICOSIA, a town of Sicily, in Demona.

NICOT, John, lord of Villemain, and maſter of requeſts of the French king's houſehold, was born at Niſmes, and was ſent ambaſſador to Portugal in 1559; whence he brought the plant which, from his name, was called NICOTIANA, but is now more generally known by the name of *Tobacco*. He died at Paris in 1603. He wrote a French and Latin dictionary in folio; a treatiſe on navigation; and other works.

NICOTERA, a town of Naples, and biſhop's ſee, in Calabria Ultra, near the coaſt of the Mediterranean; 32 miles NNE. of Reggio, and 185 SE. of Naples. Lon. 16. 30. E. Lat. 38. 34. N.

NICOTIANA, TOBACCO, in botany, a genus of the monogynia order, belonging to the pentandria claſs of plants; and in the natural method ranking under the 28th order, *Luridæ*. The corolla is funnel-ſhaped, with a plaited limb; the ſtamina inclined; the capſule bivalved and bilocular. There are 7 ſpecies, of which the moſt remarkable is

NICOTIANA TABACUM, the common tobacco plant. This plant was firſt diſcovered in America by the Spaniards about 1560, and by them imported into Europe. It had been uſed by the inhabitants of America long before; and was called by thoſe of the iſlands *yoli*, and *petun* by thoſe of the continent. It was ſent into Spain from Tabaco, a province of Yucatan, where it was firſt diſcovered, and whence it takes *name*. Sir Walter Raleigh is ſaid to have been the firſt who introduced it into England, about 1585, and taught his countrymen to ſmoke it. Dr Cotton Mather, however (in his *Chriſtian Philoſopher*), ſays, that in 1585 one Mr Lane carried over ſome of it from Virginia, which was the firſt that had ever been ſeen in Europe. Tobacco is commonly uſed among the oriental nations, though it is uncertain by whom it was introduced among them. Conſiderable quantities of it are cultivated in the Levant, on the coaſts of Greece, and the Archipelago, in Italy, and the iſland of Malta. There are two varieties of this ſpecies, diſtinguiſhed by the names of *Oronokoe* and *ſweet-ſcented tobacco*. They differ only in the figure of their leaves; thoſe of the former being longer and narrower than the latter. They are tall herbaceous plants, growing erect, with fine foliage, and riſing with a ſtrong ſtem from 6 to 9 feet high. The ſtalk near the root is upwards of an inch diameter, and ſurrounded with a kind of hairy or velvet clammy ſubſtance, of a yelloviſh green colour. The leaves are rather of a deeper green, and grow alternately 2 or 3 inches from each other. They are oblong, of a ſpear-ſhaped oval, and ſimple; the largeſt about 20 inches long, but decreaſing in ſize as they aſcend, till they be only 10 inches long, and about half as broad. The face of the leaves is much corrugated, like thoſe of ſpinage when full ripe. When they are about 5 or 6 inches long, the leaves are generally of a full green, and rather ſmooth; but as they increaſe in ſize, they become rougher, and acquire a yelloviſh caſt. The ſtem and branches are terminated by large bunches of flowers collected into cluſters, of a delicate red; the edges, when full blown, inclining to a pale purple. They continue in ſucceſſion till the end of ſummer, when they are ſucceeded by ſeeds of a brown colour, and kidney-ſhaped. Theſe are very ſmall, each capſule containing about 1000; and the whole produce of a ſingle plant is reckoned at about 350,000. The ſeeds ripen in September. Mr Carver informs us, that the Oronokoe, or *long Virginian tobacco*, is the kind beſt ſuited for bearing the rigour of a northern climate; the ſtrength, as well as the ſcent of the leaves, being greater than that of the other. The *ſweet-ſcented* ſort flouriſhes moſt in a ſandy ſoil, and in a warm climate, where it greatly exceeds the former in the celerity of its growth, and is likewiſe much more mild and pleaſant. Tobacco thrives beſt in a warm, kindly, rich ſoil, that is not ſubject to be over-run by weeds. In Virginia, the ſoil in which it thrives beſt is warm, light, and inclining to be ſandy; and therefore, to be cultivated in Britain, it ought to be planted in a ſoil as nearly of the ſame kind as poſſible. Other kinds of ſoil might probably be brought to ſuit it, by a mixture of proper manure; but whatever manure is made uſe of muſt be thoroughly incorporated with the ſoil. The beſt ſituation for a tobacco plantation is the ſouthern declivity of a hill, rather gradual than abrupt, or a ſpot that is ſheltered from the north winds; but at the ſame time it is neceſſary that the plants enjoy a free air; for without that they will not proſper. As tobacco is an annual plant, thoſe who intend to cultivate it ought to be careful in the choice of the ſeeds. They ſhould be ſown about the middle of April, or rather ſooner in a forward ſeaſon, in a bed prepared for this purpoſe of ſuch ſoil as above deſcribed, mixed with ſome warm rich manure. In a cold ſpring, hot-beds are moſt eligible for this purpoſe, and gardeners imagine that they are always neceſſary; but Mr Carver tells us, that he is convinced, when the weather is not very ſevere, the tobacco ſeeds may be raiſed without doors. See TOBACCO.

NICOYA, a town of Mexico, in Coſta Rico, on the coaſt of the South Sea, 45 miles SE. of Nicaragua. The people export to Panama ſalt, honey, maize, wheat, fowls, &c. and they have a pearl fiſhery. Lon. 88. 0. W. Lat. 10. 15. N.

NICSARA, a town of Aſiatic Turkey, in Caramania; an archbiſhop's ſee; 10 miles N. of Tocat. Lon. 53. 55. E. Ferro. Lat. 19. 25. N.

* *To* NICTATE. *v. a.* [*nicto*, Lat.] To wink.—There are ſeveral parts peculiar to brutes, which are wanting in man; as the ſeventh or ſuſpenſory muſcle of the eye, the *nictating* membrane, and the ſtrong aponeuroſes on the ſide of the neck. *Ray*.

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NICTATING, or NICTITATING MEMBRANE, a thin membrane chiefly found in birds and fish, which covers the eyes of these animals, sheltering them from dust, or too much light; yet is so thin and pellucid, that they can see pretty well through it.

NICTAU, a river of Nova Scotia, which waters the township of Annapolis.

NICUESA, a gulf on the E. coast of Honduras.

(1.) NID, a river of England, in Yorkshire, which passes by Ripley, Knaresborough, &c. and runs into the Ouse, 7 miles above York.

(2.) NID, a river of Norway. See NORWAY, § 15.

(3.) NID, a river of Scotland. See NITH.

NIDAU, a town and late bailiwic of Switzerland, in the canton of Berne; 2 miles SSE. of Bienne.

NIDDA, a town of Germany, in Upper Hesse; 20 miles NE. of Franckfort on the Maine, and 38 ENE. of Mentz. Lon. 26. 47. E. Ferro. Lat. 50. 17. N.

NIDDEN, a town of Prussia, in Samland.

NIDDISDALE. See NITHSDALE.

NIDDUI, in the Jewish customs, is used to signify *separated* or *excommunicated*. This, according to some, was to be understood of the lesser excommunication used among the Hebrews. He that had incurred it was to withdraw himself from his relations, at least to the distance of four cubits: it commonly continued a month. If it was not taken off in that time, it might be prolonged for 60, or even 90 days; but if, within this term, the excommunicated person did not give satisfaction, he fell into the *cherem*, which was a 2d sort of excommunication; and thence into the 3d sort, called *shammata* or *shemmata*, the most terrible of all. But Selden proves that there were only two kinds of excommunication, viz. the greater and less; and that these three terms were used indifferently.

* NIDE. *n. f.* [*nidus*, Lat.] A brood; as, a *nide* of pheasants.

NIDECKEN, a town of France, in the dep. of the Roer, and ci-devant duchy of Juliers; seated among rocks; 13 miles SSE. of Juliers. Lon. 24. 2. E. Ferro. Lat. 50. 46. N.

NIDERDALE, a valley in Yorkshire, watered by the NID.

NIDERENHEIM, a town of France, in the dep. of Lower Rhine, 12 miles SW. of Strasburg.

NIDERNDOFF, a town of Austria, 12 miles NNW. of Grein.

NIDEROS, and NIDROSIA, ancient names of DRONTHEIM in Norway. See NORWAY, § 15.

NIDER-VILLER, a town of France, in the dep. of Meurthe, 2 miles E. of Sarrebourg.

NIDERWASER, a river of Germany, in Austrian Suabia, which runs into the Eurach.

NIDERWOLTZ, a town of Germany, in Stiria, 8 miles NE. of Muchrau.

* NIDGET. *n. f.* [corrupted from *nithing* or *niding*. The opprobrious term with which the man was anciently branded who refused to come to the royal standard in times of exigency] A coward; a dastard.—There was one true English word of greater force than them all, now out of all use; it signifieth no more than abject, base-minded, false-hearted, coward, or *nidget*. *Camden*.

(1.) * NIDIFICATION. *n. f.* [*nidificatio*, Lat.] The act of building nests.—That place, and that method of *nidification*, doth abundantly answer the creature's occasions. *Derham*.

(2.) NIDIFICATION implies not only the formation of a bird's nest, but its hatching or bringing forth its young. See ORNITHOLOGY.

NIDJIBABAD, a town of Indostan, in Oude; 80 miles NE. of Delhi, and 96 NNW. of Bereilly. Lon. 78. 41. E. Lat. 29. 5. N.

* NIDING. *adj.* [from *nid*, Saxon, vileness.] *Niding*, an old English word, signifying abject, base-minded, false-hearted, coward or nidget. *Carew*.

NIDOISEAU, [Fr. *i. e.* Bird's Nest.] A town of France, in the dep. of Maine and Loire; 3 miles NW. of Segré.

* NIDOROSITY. *n. f.* [from *nidorous*.] Eructation with the taste of undigested roast meat.—The cure of this *nidorosity* is by vomiting and purging. *Floyer on the Humours*.

* NIDOROUS. *adj.* [*nidoreux*, from *nidor*.] Resembling the smell or taste of roasted fat.—Incense and *nidorous* smells, such as of sacrifices, were thought to intoxicate the brain, and to dispose men to devotion. *Bacon*.—The signs of the functions of the stomach being depraved are eructations with the taste of the aliment, acid, *nidorous*, or fœtid, resembling the taste of rotten eggs. *Arbuthnot*.

NIDROSIA. See NIDEROS.

* NIDULATION. *n. f.* [*nidulor*, Latin.] The time of remaining in the nest.—The ground of this popular practice might be the common opinion concerning the virtue prognostic of halcyons, the natural regard they have unto the winds, and they unto them again, more especially remarking in the time of their *nidulation*, and bringing forth their young. *Brown*.

NIDUS, *n. f.* among the naturalists, signifies a NEST or proper repository for the eggs of birds, insects, &c. where the young of these animals are hatched and nursed.

NIEBLA, a town of Spain, in Seville, containing about 3000 people; 11 miles NNE. of Moguer.

NIEBOLOW, a town of Poland, in Red Russia; 32 miles WSW. of Halitsch.

(1.) * NIECE. *n. f.* [*niece*, *nicpce*, French; *neptis*, Latin.] The daughter of a brother or sister.—

My *niece* Plantagenet,
Led in the hand of her kind aunt Gloster. *Shak*.

While he thus his *niece* bestows,
About our isle he builds a wall. *Waller*.

(2.) NIECE, in the civil law, is reckoned the 3d degree of consanguinity.

NIECHOROZ, a town of Poland, in Klow.

(1.) NIED, a river of Germany, in the circle of the Lower Rhine, which runs into the Maine near Hochst.

(2.) NIED, a river of Norway. See NORWAY.

NIEDERBRONN, a town of France, in the dep. of the Lower Rhine, 8 miles NNW. of Haguenau, and 4 SW. of Wisslemburg.

NIEDERNHALL, 2 towns of Germany: 1. in Franconia, 7 miles NE. of Oehringen: 2. in the circle

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circle of the Lower Rhine, 10 miles SSW. of Mergentheim.

NIEHUS, a town of Saxony, in Lauenburg.

NIELECOHOLO, a town of Chineſe Tartary Lon. 142. 3. E. of Ferro. Lat. 42. 1. N.

(1.) NIELSTON, a pariſh of Scotland, in Renfrewſh. about 9 miles long, and 3 broad; containing 13,570 Scots acres. The ſurface is pretty level, but divided by a range of hills, from W. to SE. called *Faraneze* and *Lochlibofide*. The low grounds are fertile; the hills are barren, but they afford a grand and extenſive proſpect. Coals, limeſtone, and free-ſtone abound. The population, in 1791, was 2330; the increaſe 1056 ſince 1755, chiefly owing to the eſtabliſhment of 4 cotton manufactures, a large printfield, and 12 bleachfields.

(2.) NIELSTON, a village in the above pariſh, containing 472 inhabitants in 1791.

(3.) NIELSTON, or the CRAIG of NIELSTON, a hill of the above pariſh, 820 feet above the ſea level, yet green and arable to the top.

NIEMANOWICZE, a town of Lithuania, in Troki, 48 miles N. of Grodno.

NIEMECK, 2 towns of Upper Saxony: 1. two miles SE. of Bitterfield: 2. 18 miles N. of Wittemberg.

NIEMECZ, a town of Turkey, in Moldavia.

NIEMEN, a large river of Poland, which riſes in Lithuania, where it paſſes by Bielica, Grodno, and Konno: it afterwards runs through part of Samogitia and Ducal Pruſſia, where it falls into the lake *Curiſch-haff*, by ſeveral mouths, of which the moſt northern is the Ruſs.

NIEMUROW, a town of Poland, in Belcz.

NIENBERG, a town of Germany, in Berg.

(1.) NIENBURG, a rich and ſtrong town of Germany, in Brunſwic Lunenburg, with a ſtrong caſtle. It carries on a conſiderable trade in corn and wool, and is ſeated in a fertile ſoil on the Weſer. Lon. 9. 26. E. Lat. 52. 44. N.

(2.) NIENBURG, a town of Saxony, in Anhalt Cothen, on the Saale; 8 miles NW. of Cothen.

NIENDORP, } two towns of Germany, in
NIENHOFF, } Holſtein.

NIENHUS, a town of Germany, in Bentheim; 16 m. NW. of Bentheim, and 17 SE. of Covorden.

NIENKERCHEN, three towns in Holſtein.

NIENRADE, a town of Germany, in Mark.

NIEPA, a town of Cuba, 55 m. N. of St Yago.

NIEPER. See BORISTHENES, and DNIEPER.

NIEPOLOMICE, a town of Poland, in Cracow; 10 miles E. of Cracow.

NIER, a river of Ireland, in Waterford.

NIERS, a river of Germany, now included in the French empire, and dep. of the Roer; which riſes near Erkelens, in the late duchy of Juliers, and runs into the Meuſe, 5 miles above Cuyck.

NIESOVIA, a town of Perſia, in Schirvan, with a harbour on the W. coaſt of the Caſpian; 45 miles SSE. of Derbend.

NIESS, a mountain of Switzerland, in the environs of Berne. It is the laſt in a high calcareous chain of hills, of which the Stockhorn, the Neuneren, and the Ganteriſh, have been illuſtrated by the botanical labours of the celebrated Haller. Nieſs ſtands on the borders of the lake Thun, and ſeparates the valley of Frutingen from that of Simme. It affords the curious traveller a fine view from its top; and it joins the Alps. Towards its foot, beds of ſlate have been diſcovered; it is of calcareous ſtone higher up; and near its top is found a ſpecies of pudding-ſtone, filled with ſmall fragments of broken petrifactions.

NIESTER. See DNIESTER.

NIESWIEZ, a town of Lithuania, in Novogrodek, 24 miles NW. of Sluck. Its palace was deſtroyed by the Swedes in 1706.

NIESYCE, a town of Lithuania, in Minſk.

(1.) NIEVA, a country of N. America, near the E. end of Hudſon's Straits. Lon. 67. 7. W. Lat. 62. 4. N.

(2.) NIEVA, an iſland on the above coaſt.

NIEUBURG. See NEUBURG.

NIEUHOFF, John DE, a Dutch author, born about the beginning of the 17th century. He wrote a valuable and curious account, in Dutch, of his embaſſy from the Dutch Eaſt-India Company to the emperor of China. Carpentier publiſhed an excellent tranſlation of it into French, in folio, Leyden, 1665. This edition is rare, and is in great requeſt.

(1.) NIEUL, a town of France, in the dep. of Lower Charente; 3 miles N. of Rochelle.

(2.) NIEUL, a town of France, in the dep. of Upper Vienne, 77 miles NW. of Limoges.

NIEUPORT, a town of France in the dep. of the Lys, and late prov. of Auſtrian Flanders. It was anciently called *Santhooſt*, but changed in 1168, when Philip, E. of Flanders, built a *new harbour*. It lies near the ſea, on a branch of the Yperlee. It was burnt in 1383, by the rebels of Ghent. In 1488, it ſuſtained a ſiege againſt Philip D. of Cleves, wherein the women ſhowed an uncommon degree of courage. In 1583, during the revolt of the Netherlands, it was reduced by the Pr. of Parma. In 1600, it was beſieged by Prince Maurice of Naſſau, and, on the 22d July, he defeated the Spaniards here, with the loſs of 2000 men killed, 600 priſoners, and 130 ſtandards and colours. In 1713, it was ceded by the treaty of Utrecht to the Britiſh, who, in 1715, ſurrendered it to the emp. Charles VI. It was taken by the French in 1745, but reſtored by the treaty of Aix La Chapelle. In Dec. 1793, it was attacked by the French republicans, under Pichegrue; and being defended by a garriſon of 4000 men, ſtood a tedious ſiege; but was ſurrendered on the 19th July 1794, and annexed to the republic in 1796. It is 6 miles NE. of Furnes, 9 SW. of Oſtend, 16 NE. of Dunkirk, and 20 NW. of Ypres. Lon. 20. 19. E. Ferro. Lat. 51. 7. N.

(1.) NIEVRE, or NYEVRE, a river of France, which riſes near Champlemy in the department to which it gives name, and runs into the Loire at Nevers.

(2.) NIEVRE, or NYEVRE, a department of France, bounded on the N. by that of Yonne; E. by thoſe of Cote d'Or, and Saone and Loire; S. by the latter and that of the Allier; and W. by that of the Cher. NEVERS is the capital. It comprehends the ci-devant province of NIVERNOIS.

NIEURIDGE, a river of Indoſtan, which runs into the Chumbul.

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NIEUSTADT. See NEUSTADT.

NIEUWENTYT, Bernard, an able philoſopher and learned mathematician, born at Weſtgraafdyk, in 1654. He became counſellor and burgomaſter of the town of Purmerend, where he was eſteemed for his integrity and learning, and died in 1718. He wrote, in Dutch, 1. An excellent treatiſe, entitled, the Exiſtence of God demonſtrated by the Works of Nature. 2. A Refutation of Spinoza. 3. Some Pieces againſt the Infiniteſimals, &c.

NIEUWIED. See NEU-WIED.

NIEUWLAND, Peter, late profeſſor of mathematics and natural philoſophy in the univerſity of Leyden, was born at Diemermeer, a village near Amſterdam, Nov. 5, 1764. His father was a carpenter, and being fond of books, and acquainted with mathematics, inſtructed his ſon till he was in his 11th year. He ſhowed very early marks of genius. He wrote poems in his 10th year, which were inſerted in various collections, and much admired. Bernard and Jerome De Boſch, two of the wealthieſt men in Amſterdam, took him under their patronage. The former took him into his houſe in his 11th year, and the latter inſtructed him for 4 years, in Latin, Greek, &c. He ſtudied philoſophy and mathematics under Wyttenbach. In 1783, he tranſlated two diſſertations of his inſtructors, on the opinions of the ancients of the ſtate of the ſoul after death. From Sept. 1784 to 1785, he ſtudied at Leyden; and afterwards at Amſterdam, under Prof. Van Swinden. He ſoon made himſelf maſter of the great Lavoiſier's theory of Chemiſtry. But his attention was chiefly directed to 3 branches of ſcience, ſeldom purſued by the ſame perſon, viz. poetry, mathematics, and natural philoſophy. Of his poems his *Orion* was much admired: and his eſſays entitled, "A Comparative view of the value of the different branches of ſcience," and, "The beſt means to render general, not learning, but ſoundneſs of Judgment and Taſte," were highly eſteemed. He alſo publiſhed ſeveral papers on aſtronomy and navigation, in Bode's Aſtronomical Almanack for 1793. But previouſly to this, he had in 1786, been appointed a member of the commiſſion choſen by the admiralty at Amſterdam, for determining the longitude and improving marine charts. In this labour he was employed 8 years; and prepared alſo a Nautical Almanack, with tables, &c. In 1787, he was invited to Amſterdam by the magiſtrates to give lectures on Mathematics, Aſtronomy, and Navigation. In this ſituation he wrote his uſeful *Treatiſe on Navigation*, publiſhed at Amſt. 1793. In 1789, he was choſen a member of a learned ſociety, whoſe chief objects were chemiſtry and philoſophy. For this ſociety he wrote *Recherches Phyſico-chymiques*, in four parts; publiſhed in 1792, 3, and 4. He alſo wrote for it, other 10 papers; 1. On the Neweſt Diſcoveries in Aſtronomy; 1788: 2. On the Figure of the Earth; 1789: 3. On the Cauſe of Comets; 1790: 4. On Mathematics: 5. On the Light of certain Fixed Stars; 1790: 6. On Spherical Trigonometry; 1791: 7. On the value of the Sciences; 1791: 8. On the Syſtem of Lavoiſier; 1792: 9. On the Selenotopographia of Schroeder; 1793: 10. On Inſtruction; 1793. In July 1793, he was invited to be profeſſor at Leyden, which he accepted; but died of a fever and inflammation of the throat on the 13th Nov. 1794. His father was a Lutheran, and his mother a Baptiſt; but he himſelf was a Calviniſt, and always expreſſed the utmoſt reſpect for the Supreme Being.

NIF, a town of Turkey, in Natolia.

NIFFO, a town of Africa, on the Grain Coaſt.

NIG. NIGG, N° 1—4.

NIGANISH, a town of Cape Breton.

NIGDEH, a town of Turkey, in Caramania.

NIGELLA, FENNEL-FLOWER, or *Devil in a Buſh*; a genus of the pentagynia order, belonging to the pentandria claſs of plants. There is no calyx; the petals are 5; there are 5 trifid nectaria within the corolla; and 5 connected capſules. There are 6 ſpecies, all natives of the warm parts of Europe, riſing from 12 to 18 inches high, with blue or yellow flowers. They are propagated by ſeeds, which in a dry and warm ſituation thrive well. They ripen ſeeds in this country.

NIGEMOU, a town of Poland, in Red Ruſſia.

(1.) NIGER, C. Peſcennius Juſtus, a celebrated governor in Syria, famed for his valour in the Roman armies while a private man. At the death of Pertinax he was declared emperor; and his claims to that elevated ſtation were ſupported by a ſound underſtanding, prudence, moderation, courage, and virtue. He rendered himſelf however extremely unpopular by the extravagant rigidneſs of his diſcipline. Severus, who had alſo been inveſted with the purple, marched againſt him; ſome battles were fought, and Niger was at laſt defeated, A. D. 195. His head was cut off and fixed to a long ſpear, and carried in triumph through Rome. He reigned about a year.

(2.) NIGER, a large river of Africa, of which many erroneous accounts have been publiſhed by geographers, even ſo late as the 3d edition of the *Encyclopædia Britannica*, where it is deſcribed as the ſame with the SENEGAL. Theſe errors, however, are very properly corrected by Dr Gleig in his Supplement to that work; from which, with the lateſt diſcoveries by Mr Park, Majors Houghton, Rennel, &c. compared with ancient authors, we can now give a moſt accurate account. By Herodotus, Pliny, Ptolemy, and other ancient hiſtorians and geographers, the Niger is uniformly ſaid to flow from *Weſt* to *Eaſt*, dividing Africa as the Danube divides Europe; and, from the report of the Africans, Herodotus calls it "a large river abounding with crocodiles." But in the 12th century Edriſe firſt led geographers wrong, by deſcribing the Niger, which he ſtyled *the Nile of the Negroes*, as running from *Eaſt* to *Weſt*, and falling into the Atlantic; and his account was univerſally adopted by ſubſequent geographers, till its falſehood was diſcovered by the African Aſſociation. From many concurring accounts, Major Houghton was convinced, that the courſe of the Niger is *from Weſt to Eaſt*, according to the moſt ancient geographers; and this truth has been confirmed, and eſtabliſhed beyond all controverſy, by Mr Park, who ſaw the Niger himſelf, and actually travelled along its banks for many miles, in its majeſtic courſe, as deſcribed by Herodotus. The Niger riſes in or near the country of Manding, or Mandingo, (See MANDINGO, and MANDINGOES), between

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between 10° and 11° of Lat. N. and between 5° and 9° Lon. W. which comprehends a country the moſt elevated of all this part of Africa. This is clear from the oppoſite courſes of the 3 great rivers which riſe in it. Theſe are the GAMBIA, which runs to the WNW. the SENEGAL, which runs to the NW. and the *Joliba*, (as the Africans call it, *i. e.* the *Great Water*,) or NIGER, running to the ENE. The head of the chief branch of the Senegal is about 80 geographical miles W. of that of the Niger; and the head of the Gambia is about 100 miles W. of the Senegal. Mr Park traced the Niger to Silla, about 420 miles from its ſource, (See SILLA,) where it is larger than the Thames at Weſtminſter. But 420 miles form a very ſmall part of the courſe of the Niger, which receives many ſtreams before it reaches Kaffina, 700 miles farther E. where it is believed to have been ſeen by the ancient Romans. Mr Park collected the following additional information from the Mooriſh and negro traders at Silla, concerning the farther courſe of this celebrated river; which he believes to be correct:—Two days journey to the E. of Silla, is the town of *Jenne*, ſeated on an iſland in the river, and ſaid to be more populous than Sego itſelf, or any other town in Bambarra. (See SEGO.) At the diſtance of other 2 days journey, the river ſpreads into a conſiderable lake called *Dibbie* (*i. e.* the *dark lake*,) which is ſo extenſive, that in croſſing it from E. to W. the canoes loſe ſight of land for one whole day. From lake Dibbie the water runs in many ſtreams, which end in two large branches, the one running NE. the other E. but uniting at Kabra, which is one days journey S. of TOMBUCTOO, and is the port of that city. The inſulated tract encircled by theſe two ſtreams is called *Jinbala*, and is inhabited by negroes; and the whole diſtance by land from Jenne to Tombuctoo is 12 days journey. From Kabra, at the diſtance of 11 days journey down the Niger, it paſſes to the S. of Houſſa, which is 2 days journey from it. (See HOUSSA.) Of the farther progreſs of this great river, Mr Park found the natives entirely ignorant. Their trade ſeldom leads them farther than Tombuctoo and Houſſa, and they pay no attention to geography farther than their traffic is concerned. But it is highly probable, that the Niger affords a communication with very remote nations. All Mr Park's informers agreed, that many of the negro merchants, who arrive at Houſſa and Tombuctoo from the E. ſpeak a very different language from that of Bambarra, or any other kingdom they are acquainted with. And theſe merchants ſpeak of the amazing length of the river in very ſtrong terms, ſaying, "they believe *it runs to the world's end*." Major Rennel, upon comparing many accounts of the progreſs of this river beyond Houſſa, with the idea of its termination prevalent in that city, thinks it highly probable, that the Niger has no direct communication with the ſea, but that it ſpreads out into a great lake in Wangara and Ghana, where its waters are evaporated by the heat of the ſun.

(3.) NIGER, a river of England, which runs into the German Ocean below Clay, in Norfolk.

(1.) NIGG, [Gaelic, *i. e.* a peninſula,] a pariſh of Scotland, of a peninſular form, on the NE. point of Kincardineſhire, called Girdle-Neſs, at the termination of the Grampians. It is waſhed on the NW. by the Dee, and on the NE. by the Bay of Aberdeen; to which it preſents a bold face of rock from 60 to 80 feet high. Above this rock is a heathy hill, 200 feet above the ſea level, covered with two cairns, which anſwer as land marks, being ſeen ſeveral leagues off. The air is cold but healthy; the ſoil partly clay, but the greater part loam. Of 3,376 acres, 1,102 are arable; 584 paſture, and the reſt under moſs, moor, and wood. It abounds with granite, which has been dug for exportation. Huſbandry is improved, and oats, barley, potatoes, turnips, &c. are raiſed. Fiſheries of ſalmon, cod, haddocks, lobſters, &c. are carried on. The population, in 1792, was 1090; decreaſe 199 ſince 1755.

(2.) NIGG, a fiſhing village, in the SW. border of the above pariſh, with a natural harbour, called the *Cove* or *Bay of Nigg*, at the mouth of the Dee; 4 miles S. of Aberdeen, and 12 NNE of Stonehaven. Lon. 2. 9. W. Lat. 57. 9. N.

(3.) NIGG, a pariſh of Scotland, in Roſs-ſhire, of a peninſular form; above 5 miles long from SW. to NE. and from 2 to 3 broad; bounded by the Murray Frith on the SE. and by that of Cromarty on the SW. The arable grounds conſiſt of a rich loam on a clay bottom, producing good crops of barley, oats, peaſe, and potatoes. The population in 1792, was 1135; decreaſe 198, ſince 1755. Near the houſe of Shandwicke ſtands a large obeliſk, with figures of animals and a croſs; erected in memory of a ſhipwreck of ſome Daniſh invaders on the coaſt, wherein three of the king of Denmark's ſons are ſaid to have periſhed. Veſtiges of the moat that ſurrounded the fort of *Dunſkeath*, mentioned in Sir D. Dalrymple's Annals to have been erected by William I. in 1179, are ſtill viſible.

(4.) NIGG, a hill in the SE. ſide of the above pariſh, extending 5 miles along the Murray frith, and abounding with medicinal herbs. Its rocks which are ſeveral hundred feet high, are frequented by eagles, cormorants, and ſea-fowls.

(1.) NIGGARD. *adj.* [*ninggr*, Iſlandick.] 1. Sordid; avaricious, parſimonious.—

One ſhe found
Of gentle blood; but one whoſe *niggard* fate
Had ſet him far below her high eſtate. *Dryden.*

2. Sparing; wary.—

Moſt free of queſtion, but to our demands
Niggard in his reply. *Shak.*

(2.) * NIGGARD. *n. ſ.* A miſer; a curmudgeon; a ſordid, avaricious, parſimonious fellow.—Then let thy bed be turned from fine gravel to weeds or mud. Let ſome unjuſt *niggards* make weres to ſpoil thy beauty. *Sidney.*—Be not a *niggard* of your ſpeech. *Macbeth.*—

Serve him as a grudging maſter,
As a penurious niggard of his wealth. *Milton.*

Be *niggards* of advice on no pretence;
For the worſt avarice is that of ſenſe. *Pope.*

* *To* NIGGARD. *v. a.* [from the noun.] To ſtint; to ſupply ſparingly.—

Nature muſt obey neceſſity;
Which we will *niggard* with a little reſt. *Shak.*

* NIGGARDISH. *adj.* [from *niggard*] Having ſome diſpoſition to avarice.

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* NIGGARDLINESS. *n. f.* [from *niggardly.*] Avarice; ſordid parſimony.—*Niggardlineſs* is not good huſbandry, nor generoſity profuſion. *Addiſ.*

(1.) * NIGGARDLY. *adj.* [from *niggard.*] 1. Avaricious; ſordidly parſimonious.—Where the owner of the houſe will be bountiful, it is not for the ſteward to be *niggardly*. *Hall.*—Love, a penurious god, very *niggardly* of his opportunities, muſt be watched like a hard-hearted treaſurer. *Dryden.*—Why are we ſo *niggardly* as to ſtop at one fifth? Why do we not raiſe it one full moiety, and double our money? *Locke.*—

Providence, not *niggardly* but wiſe,
Here laviſhly beſtows, and there denies,
That by each other's virtues we may riſe.
Granville.

—Tiberius was noted for his *niggardly* temper; he uſed only to give to his attendants their diet. *Arbuthnot.* 2. Sparing; wary.—I know your mind, and I will ſatisfy it; neither will I do it like a *niggardly* anſwerer, going no farther than the bounds of the queſtion. *Sidney.*

(2.) * NIGGARDLY, *adv.* Sparingly; parſimoniouſly.—I have long loved her, followed her, ingroſſed opportunities to meet her; feed every ſlight occaſion that could but *niggardly* give me a ſight of her. *Shak.*

* NIGGARDNESS. *n. f.* [from *niggard.*] Avarice; ſordid parſimony. Not uſed.—All preparations, both for food and lodging, ſuch as would make one deteſt *niggardneſs*, it is ſo ſluttiſh a vice. *Sidney.*

(1.) * NIGH. *adv.* [*nyh*, Saxon.] 1. Not at a great diſtance, either in time or place, or courſe of events: when it is uſed of time, it is applied to time future.—He was ſick *nigh* unto death. *Phil.* ii. 27. 2. To a place near.—Mordecai ſent letters both *nigh* and far. *Eſther.*

He drew *nigh*, and to me held,
Even to my mouth, of that ſame fruit held part
Which he had pluck'd. *Milton.*

I will defer that anxious thought,
And death, by fear, ſhall not be *nigher* brought.
Dryden.

3. Almoſt; as he was *nigh* dead.

(2.) * NIGH. *adj.* 1. Near; not diſtant; not remote: either in time or place.—The fig tree putteth out leaves, ſummer is *nigh*. *Matth.*—

The loud tumult ſhews the battle *nigh*. *Prior.*
Now too *nigh* th' archangel ſtood. *Milton.*

2. Allied cloſely by blood.—He committed the protection of his ſon Aſanes to two of his *nigh* kinſmen and aſſured friends. *Knolles.*—His uncle or uncle's ſon, or any that is *nigh* of kin unto him of his family, may redeem him. *Lev.* xxv. 49.

(3.) * NIGH. *prep.* At no great diſtance from.

They ſhone
Stars diſtant, but *nigh* hand ſeem'd other worlds.
Milton.

Nigh this receſs, with terror they ſurvey,
Where death maintains his dread tyrannic ſway.
Garth.

* *To* NIGH. *v. n.* [from the particle.] To approach; to advance; to draw near.—Now day is done and night is *nighing* faſt. *Hubberd.*

* NIGHLY. *adv.* [from *nigh* the adject.] Nearly: within a little.—A man born blind, now adult, was taught by his touch to diſtinguiſh between a cube and a ſphere of the ſame metal, and *nighly* of the ſame bigneſs. *Locke.*

* NIGHNESS. *n. f.* [from nigh.] Nearneſs; proximity.

(1.) * NIGHT. *n. f.* [*nauts*, Gothick; *nibt*, Sax. *nuit*, Fr.] 1. The time of darkneſs; the time from ſun-ſet to ſun-riſe.—The duke of Cornwall, and Regan his ducheſs, will be here this *night*. *Shak.*—In the morning he ſhall devour the prey, and at *night* divide the ſpoil. *Gen.* xlix. 27.—

Let them ſleep, let them ſleep on,
'Till this ſtormy *night* be gone,
And th' eternal morrow dawn;
Then the curtains will be drawn;
And they waken with that light,
Whoſe day ſhall never ſleep in *night*. *Crawſhaw.*

Dire Tiſiphone there keeps the ward,
Girt in her ſanguine gown by *night* and day,
Obſervant of the ſouls that paſs the downward way. *Dryden.*

2. The end of the day of life; death.—

She cloſ'd her eyes in everlaſting *night*. *Dryd.*

3. State or time of ignorance or obſcurity.—

When learning after the long Gothic *night*,
Fair o'er the weſtern world diffus'd her light.
Anon.

4. State of being not underſtood; unintelligibility.—

Nature and Nature's work lay hid in *night*.
Pope.

5. It is much uſed in compoſition.

(2.) NIGHT, (§ *def.* 1.) is that part of the natural day during which the ſun is below the horizon. Night was originally divided by the Hebrews and other eaſtern nations into 3 parts or watches. The Romans, and after them the Jews, divided the night into 4 watches; the firſt began at ſunſet, and laſted till 9, according to our reckoning; the 2d laſted till midnight; the 3d till 3 A. M. and the 4th ended at ſun-riſe. The ancient Gauls and Germans divided their time, not by days, but by nights; and the people of Iceland and the Arabs ſtill do the ſame. The like is obſerved of the Anglo-Saxons.—The length and ſhortneſs of night is according to the ſeaſon of the year and poſition of the place; and the cauſes of this variety are now well known. See ASTRONOMY, &c.

(3.) NIGHT, in mythology. See NOX.

* *To* NIGHT. *adverbially.* In this night; at this night.—There came men in hither *to-night* of the children of Iſrael, to ſearch out the country. *Joſh.* ii. 2.

NIGHT ANGLING, a method of catching large and ſhy fiſh in the night time. Trouts and many other fiſh, are naturally ſhy and fearful; they therefore prey in the night as the ſecureſt time.—The method of taking them on this plan is as follows: The tackle muſt be ſtrong, and need not be ſo fine as for day fiſhing, when every thing is ſeen; the hook muſt be baited with a large earth worm, or a black ſnail, and thrown into the river; there muſt be no lead to the line, ſo that the bait may not ſink, but be kept drawling along, upon or near the ſurface. Whatever trout is near the place will be brought thither by the motion of the water, and will ſeize the worm or ſnail. The angler will be alarmed by the noiſe which

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which the fish makes in rising, and must give him line, and time to swallow the hook; then a slight touch secures him. The best and largest trouts bite thus in the night; and they mostly rise in the still and clear deeps. Sometimes though there are fish about the place, they will not rise at the bait: in this case the angler must put on some lead to his line, and sink it to the bottom.

* NIGHTBRAWLER. *n. f.* [*night* and *brawler*.] One who raises disturbances in the night.—

You unlace your reputation,
And spend your rich opinion for the name
Of a *night-brawler*. *Shak. Othello.*

* NIGHTCAP. *n. f.* [*night* and *cap*.] A cap worn in bed, or in undress.—The rabblement houted, and clapt their chopt hands, and threw up their sweaty *night-caps*. *Shak. Julius Cæsar.*—Great mountains have a perception of the disposition of the air to tempests sooner than the valleys below; and therefore they say in Wales, when certain hills have their *night-caps* on, they mean mischief. *Bacon's Nat. Hist.*

His *night-cap* border'd round with lace,
Could give no softness to his face. *Swift.*

* NIGHTCROW. *n. f.* [*night* and *crow*; *nycticorax*, Lat.] A bird that cries in the night.—

The owl shriek'd at thy birth, an evil sign;
The *night-crow* cry'd. *Shak.*

* NIGHTDEW. *n. f.* [*night* and *dew*.] Dew that wets the ground in the night.—

All things are hush'd, as nature's self lay dead,
And sleeping flowers beneath the *night-dew* sweat:
E'en lust and envy sleep. *Dryd. Ind. Emp.*

* NIGHTDOG. *n. f.* [*night* and *dog*.] A dog that hunts in the night. Used by deer-stealers.—When *night-dogs* run, all sorts of deer are chased. *Shak.*

* NIGHTDRESS. *n. f.* *night* and *dress*.] The dress worn at night.—

The fair ones feel such maladies as these,
When each new *night-dress* gives a new disease. *Pope.*

NIGHTED. *adj.* [from *night*.] Darkened; clouded; black.—

It was great ign'rance, Glo'ster's eyes being out,
To let him live; Edmund, I think, is gone,
In pity of his misery, to dispatch
His *nighted* life. *Shak. King Lear.*

Good Hamlet, cast thy *nighted* colour off,
And let thine eye look like a friend on Denmark. *Shak.*

* NIGHTFARING. *n. f.* [*night* and *fare*.] Travelling in the night.—

Will-a-Wisp misleads *night-faring* clowns,
O'er hills and sinking bogs. *Gay.*

* NIGHTFIRE. *n. f.* [*night* and *fire*.] *ignis fatuus*; Will-a-Wisp.—

Foolish *night-fires*, women's and children's wishes,
Chases in arras, gilded emptiness. *Herbert.*

* NIGHTFLY. *n. f.* [*night* and *fly*.] Moth that flies in the night.—

Why rather, sleep, lies thou in smoaky cribs,
And hush't with buzzing *night-flies* to thy slumber,
Than in the perfum'd chambers of the great,
And lull'd with sounds of sweetest melody? *Shak.*

* NIGHTFOUNDERED. *adj.* [from *night* and *founder*.] Lost or distressed in the night.—

Either some one like us *nightfoundered* here,
Or else some neighbour woodman, or at worst,
Some roving robber calling to his fellows. *Milt.*

* NIGHTGOWN. *n. f.* [*night* and *gown*.] A loose gown used for an undress.—

I have seen her rise from her bed, throw
Her *night-gown* upon her. *Shak. Macbeth.*

—They have put me in a silk *night-gown* and a gaudy fool's cap. *Addison's Guardian.*—

To meagre muse-rid mope, adust and thin,
In a dun *night-gown* of his own loose skin. *Pope.*

* NIGHTHAG. *n. f.* [*night* and *hag*.] Witch supposed to wander in the night.—

Nor uglier follows the *nighthag*, when called
In secret, riding thro' the air she comes. *Milt.*

(1.) * NIGHTINGALE. *n. f.* [from *night* and *galan*, Saxon, to sing; *galm*, Teutonick, is a sound or echo.] 1. A small bird that sings in the night with remarkable melody; Philomel.—

The *nightingale*, if she should sing by day,
When every goose is cackling, would be thought
No better a musician than the wren. *Shak.*

—I perceive the *nightingale* hath some disadvantage in the tongue. *Brown.*—

Thus the wise *nightingale* that leaves her home,
To foreign groves does her old music bring. *Waller.*

2. A word of endearment.—

My *nightingale!*
We'll beat them to their beds. *Ant. and Cleop.*

(2.) NIGHTINGALE, in ornithology; a species of motacilla. See MOTACILLA, N° 7. Its eyes are remarkably large and piercing; and though it is about equal in size to the redstart, it is longer in body, and more elegantly made. Mr Hunter found by dissection, that the muscles of the larynx are stronger in the nightingale than in any other bird of the same size. Sibbald places them in his list of Scotch birds; but they certainly are unknown in that part of Great Britain, probably from the scarcity and the recent introduction of hedges there. Yet they visit Sweden, a much more severe climate. In England they frequent thick hedges, and low coppices; and generally keep in the middle of the bush, so that they are very rarely seen. When the young ones first come abroad, the old birds make a plaintive and jarring noise with a sort of snapping as if in menace, pursuing the passengers along the hedge. They begin their song in the evening, and continue it the whole night. These vigils did not pass unnoticed by the ancients: the slumbers of these birds were proverbial; and not to rest as much as the nightingale expressed a very bad sleeper. If the nightingale is kept in a cage, it often begins to sing about the end of November, and continues its song more or less till June.—A young canary bird, linnet, sky-lark, or robin, (who have never heard any other bird) are said best to learn the note of a nightingale.

(3.) NIGHTINGALE, MOCK. See MOTACILLA, N° 2.

(4.) NIGHTINGALE, VIRGINIAN, in ornithology, the common, but improper name of a bird of the gros-

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groſs-beaked kind, called by ſome authors *coccothraustes Indica criſtata*. It is a little ſmaller than our blackbird; it has a black ring ſurrounding the eyes and noſtrils; the beak is very large and thick, but not altogether ſo large as in the common groſs-beak; and its head is ornamented with a very high and beautiful creſt, which it moves about very frequently; it is all over of a very fine and lively red, but paler on the head and tail than elſewhere; it is brought from Virginia, and is much valued in England for its beauty and delicate ſinging; it is very fond of almonds and the like fruits.

(1.) * NIGHTLY. *adj.* [from *night*.] Done by night; acting by night; happening by night.—

May the ſtars and ſhining moon attend
Your *nightly* ſports. *Dryden.*

Soon as the flocks ſhook off the *nightly* dews,
Two ſwains, whom love kept wakeful and the muſe,
Pour'd o'er the whit'ning vale their fleecy care. *Pope.*

(2.) * NIGHTLY. *adv.* [from *night*.] 1. By night.

Thee, Sion! and the flow'ry brooks beneath,
That waſh thy hallow'd feet, and warbling flow,
Nightly I viſit. *Milton's Par. Loſt.*

Let all things ſuffer,
Ere we will eat our meal in fear, and ſleep
In the affliction of thoſe terrible dreams
That ſhake us *nightly*. *Shak. Macbeth.*

2. Every night.—

The moon takes up the wondrous tale,
And *nightly* to the liſt'ning earth
Repeats the ſtory of her birth. *Addiſon.*

* NIGHTMAN, *n. ſ.* [*night* and *man*.] One who carries away ordure in the night.

(1.) * NIGHTMARE. *n. ſ.* [*night*, and, according to *Temple*, *mara*, a ſpirit that, in the northern mythology, was related to torment or ſuffocate ſleepers.] A morbid oppreſſion in the night, reſembling the preſſure of weight upon the breaſt.—

Saint Withold footed thrice the wold;
He met the *nightmare*, and her name he told;
Bid her alight, and her troth plight. *Shak.*

—The forerunners of an apoplexy are, dulneſs, drowſineſs, vertigoes, tremblings, oppreſſions in ſleep, and *night-mares*. *Arbuthnot.*

(2.) NIGHTMARE. See INCUBUS, and MEDICINE, *Index*.

(1.) NIGHTON, a town of the Iſle of Wight, in E. Medina.

(2.) NIGHTON, a village in Cornwall, SE. of Leſtwithiel.

* NIGHTPIECE. *n. ſ.* [*night* and *piece*.] A picture ſo coloured as to be ſuppoſed ſeen by candle-light; not by the light of the day.—He hung a great part of the wall with *night-pieces*, that ſeemed to ſhow themſelves by the candles which were lighted up. *Addiſon.*

* NIGHTRAIL. *n. ſ.* [*night regl*, Saxon, a gown or robe.] A looſe cover thrown over the dreſs at night.—An antiquary will ſcorn to mention a pinner or *night-rail*; but will talk as gravely as a father of the church on the vitta and peplus. *Addiſ. on Med.*

* NIGHTRAVEN. *n. ſ.* [*night raven*; *nycticorax*.] A bird ſuppoſed of ill omen, that cries loud in the night.—

The hoarſe *night-raven*, trump of doleful drere. *Spenſer.*

I had as lief have heard the *night-raven*, —
Come what plague would. *Shak.*

* NIGHTROBBER. *n. ſ.* [*night* and *robber*.] One who ſteals in the dark.—Highways ſhould be fenced on both ſides, whereby thieves and *night-robbers* might be more eaſily purſued. *Spenſer on Ireland.*

* NIGHTRULE. *n. ſ.* [*night* and *rule*.] A tumult in the night.—

How now, mad ſprite,
What *night-rule* now about this haunted grove? *Shak.*

(1.) * NIGHTSHADE. *n. ſ.* [*niht ſcada*, Saxon.] A plant of two kinds: 1. Common nightſhade. [*ſolanum*.] 2. Deadly nightſhade. [*belladona*.]

(2.) NIGHTSHADE. See SOLANUM, N° 1, 5.

(3, 4.) NIGHTSHADE, AMERICAN. See PHYTOLACCA, and RIVINA.

(5.) NIGHTSHADE, DEADLY. See ATROPA.

(6.) NIGHTSHADE, ENCHANTERS'. See CIRCÆA.

(7.) NIGHTSHADE, MALABAR. See BASELLA.

(8.) NIGHTSHADE, THREE LEAVED. See TRILLIUM.

* NIGHTSHINING. *adj.* [*night* and *ſhine*.] Shewing brightneſs in the night.—None of theſe noctiluca, or *night-ſhining* bodies, have been obſerved in any of the ancient ſepulchres. *Wilkin's Dædalus.*

* NIGHTSHRIEK. *n. ſ.* [*night* and *ſhriek*.] A cry in the night.—

The time has been, my ſenſes would have cool'd
To hear a *night-ſhriek*. *Shak. Macbeth.*

* NIGHTTRIPPING. *adj.* [*night* and *trip*.] Going lightly in the night.—

Could it be prov'd
That ſome *night-tripping* fairy had exchang'd,
In cradle clothes, our children where they lay,
Then would I have his Harry and he mine. *Shak.*

* NIGHTWALK. *n. ſ.* [*night* and *walk*.] Walk in the night.—If in his *night-walk* he met with irregular ſcholars, he took their names, and a promiſe to appear, unſent for, next morning. *Walton's Life of Sanderſon.*

(1.) * NIGHTWALKER. *n. ſ.* [*night* and *walk*.] One who roves in the night upon ill deſigns.—Men that hunt ſo, be privy ſtealers, or *night-walkers*. *Aſcham.*

(2.) NIGHT-WALKERS, in law, are ſuch perſons as ſleep by day and walk by night, being oftentimes pilferers, or diſturbers of the public peace. Conſtables are authoriſed by the common law to arreſt night-walkers and ſuſpicious perſons, &c. Watchmen may alſo arreſt night-walkers, and hold them until the morning; and it is ſaid, that a private perſon may arreſt any ſuſpicious night-walker, and detain him till he give a good account of himſelf. One may be bound to good behaviour for being a night-walker; and common night-walkers, or haunters of bawdy-houſes, are to be indicted before juſtices of peace, &c. But it is not held lawful for a conſtable, &c. to take up any woman as a night-walker on bare ſuſpicion only of being of ill fame, unleſs ſhe be guilty of a breach of the peace, or ſome unlawful act, and found miſdoing.

(3.) NIGHT-WALKERS, in medicine. See MEDICINE,

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BICINE, § 960; NOCTAMBULI, and SLEEP-WALKER.

* NIGHTWARBLING. *adj.* [*night* and *warble.*] Singing in the night.—

Now is the pleasant time,
The cool, the silent, save where silence yields
To the *night-warbling* bird. *Milt. Par. Loſt.*

* NIGHTWARD. *adj.* [*night* and *ward.*] Approaching towards night.—Their *nightward* ſtudies, wherewith they cloſe the day's work. *Milt. on Education.*

* NIGHTWATCH. *n. ſ.* [*night* and *watch.*] A period of the night as diſtinguiſhed by change of the watch.—I meditate on thee in the *night-watches. Pſalm* lxiii. 6.

NIGIDIUS FIGULUS, Publius, one of the moſt learned men of ancient Rome, flouriſhed at the ſame time with Cicero. He wrote on various ſubjects; but his pieces appeared ſo refined and difficult, that they were not regarded. He aſſiſted Cicero, with great prudence, in defeating Catiline's conſpiracy, and did him many ſervices in the time of his adverſity. He adhered to Pompey in oppoſition to Cæſar; which occaſioned his exile, and he died in baniſhment. Cicero, who had always entertained the higheſt eſteem for him, wrote a beautiful conſolatory letter to him (the 13th of *lib. 4. ad Familiares*).

NIGONO, a town of Italy, in the dep. of Panaro, and diſtrict, late duchy, of Modena; 22 miles SW. of Modena.

* NIGRESCENT. *adj.* [*nigreſcens*, Latin.] Growing black; approaching to blackneſs.

* NIGRIFICATION. *n. ſ.* [*niger* and *facio*, Lat.] The act of making black.

NIGRINA, in botany, a genus of the monogynia order, belonging to the pentandria claſs of plants. The corolla is funnel-ſhaped; the calyx inflated; the ſtigma obtuſe; the capſule bilocular.

NIGRITIA. See NEGROLAND.

NIG-TSING, a town of China, of the 3d rank, in the prov. of Pe-tche-li; 25 miles E. of King.

(1.) NIGUA, or CHEGOE, in zoology, the Indian name of an inſect common in Mexico and Peru, and alſo found in other hot countries, where it is called PIQUE, is an exceeding ſmall animal, not very unlike a flea, and is bred in the duſt. It fixes upon the feet, and breaking inſenſibly the cuticle, it neſtles betwixt that and the true ſkin, which alſo, unleſs it is immediately taken out, it breaks, and pierces at laſt to the fleſh, multiplying with a rapidity almoſt incredible. It is ſeldom diſcovered until it pierces the true ſkin, when it cauſes an intolerable itching. Theſe inſects, with their aſtoniſhing multiplication, would ſoon diſpeople thoſe countries, were it leſs eaſy to avoid them, or were the inhabitants leſs dexterous in getting them out before they begin to ſpread. The poor, however, who are doomed by the rich to live in the duſt, and to a habitual neglect of their perſons, ſuffer theſe inſects ſometimes to multiply ſo far as to make large holes in their fleſh, and even to occaſion dangerous wounds. If it is perceived in the beginning, it is extracted with little pain; but having once lodged its head, and pierced the ſkin, the patient muſt undergo the pain of an inciſion, without which a nodus would be formed, and a multitude of inſects engendered, which would ſoon overſpread the foot and leg. One ſpecies of the *nigua* is venomous; and when it enters the toe, an inflammatory ſwelling, greatly reſembling a venereal bubo, takes place in the groin.

(2.) NIGUA, a river of Hiſpaniola, on the S. ſide of the iſland, which falls into the ſea 21 miles E. of the Niſſao.

(3, 4.) NIGUA, a town and pariſh of Hiſpaniola, on the above river, containing 2500 inhabitants before the late convulſions.

NIHIL ALBUM, [Lat. *i. e.* A White Nothing,] a name given to the white flocks that iſſue from burning zinc; called alſo POMPHOLIX, *Philoſophical Wool*, and FLOWERS OF ZINC; and in the new nomenclature *the Sublimed Oxide of Zinc.* See CHEMISTRY, § 852; and METALLURGY, *Part* III. *Sect.* III.

* NIHILITY. *n. ſ.* [*nihilité*, Fr. *nihilum*, Lat.] Nothingneſs; the ſtate of being nothing.—Not being is conſidered as excluding all ſubſtance, and then all modes are alſo neceſſarily excluded; and this we call pure *nihility*, or mere nothing. *Watts.*

NIJAR, a town of Spain, in Grenada, 12 miles NE. of Almeria.

NIKALINZIN, a town of Poland, in Red Ruſſia, 44 miles S. of Halicz.

NIKDE, or NIGDEH. See NIGDEH.

NIKIA, a town of Turkey, in Macedonia.

NIKIOPING, or NYKOPING, [*i. e.* New Mart,] an ancient city of Sweden, capital of Sudermanland, ſeated at the mouth of a river, which runs through it, and has a ſtone bridge near the Baltic. It was anciently the reſidence of the kings of Sudermania. The climate is very ſalubrious. It was almoſt burnt in 1661; its caſtle was demoliſhed in 1665; and it was ravaged by the Ruſſians in 1719. It has 2 churches, a good harbour, and manufactories of cloth and leather; and carries on great trade by ſea. The population is above 1200. It lies 50 miles, Cruttwell ſays 60, SW. of Stockholm. Lon. 16. 40. E. Lat. 58. 40. N.

NIKITSK, a town of Ruſſia, in Moſcow.

NIKOLAEUSKOI, 3 towns of Ruſſia; two in Tobolſk, and one in Vologda.

NIKOLSK, a town of Ruſſia, in Uſtiug.

NIKOLSKOI, 5 towns of Ruſſia, of which 3 are in the prov. of Archangel: 1ſt, 52 miles SW. of Archangel; 2d, 72 miles SE. of Onega; 3d, 52 miles S. of Mezen: 4. in Vologda, 24 miles SE. of Vologda: 5. in Upland, on the Ural, 80 miles ESE. of Orenburg.

(1.) NIKOPING, a town of Denmark, capital of the iſland of Falſter, 55 miles SW. of Copenhagen. Lon. 12. 7. E. Lat. 54. 40. N.

(2.) NIKOPING. See NIKIOPING.

NIKOTSKOI, a town of Ruſſia, in Tobolſk, 40 miles N. of Tomſk.

NILAB, a name given to the INDUS.

(1.) NILE, a large and celebrated river of Africa, to which the country of Egypt owes its fertility; and the exploring of the ſources of which has, from the remoteſt ages, been accounted impracticable. Of late, however, this has been done by James Bruce, Eſq. of Kinnaird, in Scotland; who ſpent ſeveral years at the court of Abyſſinia, and, by the favour of the emperor and great

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people of the country, was enabled to accomplish the arduous task. See BRUCE, N° 1.

(2.) NILE, ATTEMPTS MADE TO DISCOVER THE SOURCES OF THE. Mr Bruce, in his Travels, says, the inquiry concerning its springs began before either history or tradition. The philosophers of Meroe, in his opinion, were the first who undertook to make observations to determine the point; their country being so situated, that they could perceive every thing relative to the increase or decrease of the river, without any danger from its overflowing. Being much addicted to astronomy, it could not long escape them, that the heliacal rising of the dog-star was a signal for Egypt to prepare for the inundation; without which it was vain to expect any crop. In these early ages, when travelling into foreign countries was impracticable by private persons, the inquiry into the sources of the Nile became an object to the greatest monarchs. Sesostris preferred the honour of discovering them to all the victories he had obtained. Alexander the Great had a great curiosity to discover these fountains. He employed natives of Ethiopia to make search, but they missed their aim. Ptolemy Philadelphus followed Alexander's attempts to discover the source of the Nile; but he likewise proving unsuccessful, the task was next in vain undertaken by Ptolemy Euergetes. Cæsar had the same curiosity with other conquerors to visit the springs of the Nile, though his situation did not allow him to make any attempt for that purpose. Nero, however, was more active. He sent two centurions into Ethiopia, with orders to explore the unknown fountains of this river; but they returned without accomplishing their errand. No other attempt was made by the ancients to discover the sources of this celebrated river; and the matter was looked upon to be an impossibility, insomuch that *caput Nili quærere* became a proverb, denoting the impossibility of any undertaking. The only account of the fountains of the Nile published before that of Mr Bruce, was Kircher's; who says that he took it from the writings of Peter Paez. Mr Bruce, however, adduces many proofs to support his assertion, that Paez never saw these fountains; and he considers himself as the first European who reached the sources of this river.

(3.) NILE, MR BRUCE'S DESCRIPTION OF THE SOURCES OF THE. Our author informs us that the sources of the Nile are in the country of the Agows, as Kircher had said; so that the latter must either have visited them himself, or have had very good information concerning them. The name of the place through which is the passage to the territory of the Agows, is *Abala*; a plain, or rather valley, generally about half a mile, and nowhere exceeding a whole mile, in breadth. The mountains which surround it are at first of an inconsiderable height, covered to the very top with herbage and acacia trees; but in proceeding to the S. they become more rugged and woody. On the top of these mountains are delightful plains, producing excellent pasture. Those of the W. join a mountain called *Aformaska*, where, from a direction nearly SE. they turn S. and inclose the villages and territory of Sacala, which lie at the foot of them; and still lower, that is, more to the W. is the small village of Geesh, where the fountains of the Nile are situated. Here the mountains are in the form of a crescent; and along these the river takes its course. Those which inclose the E. side of the plain run parallel to the former in their whole course, making part of the mountains of Lechtambara, or at least joining with them; and these two, when behind Aformaska, turn to the S. and then to the SW. taking the same form as they do; only making a greater curve, and inclosing them likewise into the form of a crescent, the extremity of which terminates immediately above a small lake named *Gooderos*, in the plain of Assoa, below Geesh, and directly at the fountains of the Nile. Having passed several considerable streams, all of which fall into the Nile, our traveller found himself at last obliged to ascend a very steep and rugged mountain, where no other path was to be found but a very narrow one made by the sheep or goats, and which in some places was broken, and full of holes; in others, he was obstructed with large stones, which seemed to have remained there since the creation. The whole was covered with thick wood; and he was everywhere stopped by the KANTUFFA (see ETHIOPIA, § 68.), as well as by several other thorny plants, as troublesome as that. Having at last, however, reached the top, he had a sight of the Nile immediately below him; but so diminished in size, that it now appeared only a brook scarce sufficient to turn a mill. The village of Geesh is not within sight of the fountains of the river, though not more than 600 yards distant from them. The country about that place terminates in a cliff about 300 yards high, which reaches down to the plain of Assoa, continuing in the same degree of elevation till it meets the Nile again about 17 miles to the S. after having made the circuit of the provinces of Gojam and Damot. From the edge of the cliff of Geesh, above where the village is situated, the ground slopes with an ascent due N. to a triangular marsh upwards of 86 yards broad, and 286 from the edge of the cliff, and from a priest's house where Mr Bruce resided. On the E. the ground descends with a very gentle slope from the large village of SACALA, which gives name to the territory, and is about six miles from the source, though to appearance not above two. About the middle of this marsh, and not quite 40 yards from the foot of the mountain of Geesh, rises a circular hillock, about three feet from the surface of the marsh itself, though founded apparently much deeper in it. The diameter of this hillock is not quite 12 feet, and it is surrounded by a shallow trench, which collects the water, and sends it off to the E. This is firmly built of sod brought from the sides, and kept constantly in repair by the Agows, who worship the river, and perform their religious ceremonies upon this as an altar. In the midst of it is a circular hole, a work of art. It is always kept clear of grass and aquatic plants, and the water in it is perfectly pure and limpid, but without any motion on its surface. The mouth is some parts of an inch less than three feet diameter; and at the time our author first visited it (Nov. 5, 1770), the water stood about two inches from the brim, nor did it either increase or diminish during all the time

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time of his reſidence at Geeſh. On putting down the ſhaft of a lance, he found a very feeble reſiſtance at ſix feet four inches, as if from weak ruſhes and graſs: and about ſix inches deeper, he found his lance had entered into a ſoft earth, but met with no obſtruction from ſtones or gravel: and the ſame was confirmed by uſing a heavy plummet, with a line beſmeared with ſoap.—This is the firſt fountain of the Nile. The 2d fountain is about 10 feet from the former, a little to the W. by S. and is only 11 inches in diameter, but 8 feet 3 inches deep. The 3d is about 20 feet SSW. from the firſt; the mouth being ſomewhat more than two feet in diameter, and 5 feet 8 inches in depth. Theſe fountains are made uſe of as altars; and from the foot of each iſſues a briſk running rill, which, uniting with the water of the firſt trench, goes off at the E. ſide in a ſtream which, our author conjectures, would fill a pipe about two inches diameter. The water of theſe fountains is extremely light and good, and intenſely cold, though expoſed to the ſcorching heat of the ſun without any ſhelter; there being no trees nearer than the cliff of Geeſh. The longitude of the principal fountain was found by Mr Bruce to be 36° 55′ 30″ E. of Greenwich. The elevation of the ground muſt be great, as the barometer ſtood only at 22 Engliſh inches. "Neither ſays he did it vary ſenſibly from that height any of the following days I ſtaid at Geeſh; and thence I inferred, that at the ſources of the Nile I was then more than two miles above the level of the ſea; a prodigious height, to enjoy a ſky perpetually clear, as alſo a hot ſun never overcaſt for a moment with clouds from riſing to ſetting." In the morning of Nov. 6. the thermometer ſtood at 44°, at noon 96°, and at ſunſet 46°. It was ſenſibly cold at night, and ſtill more ſo about an hour before ſunriſe. The Nile, thus formed by the union of ſtreams from theſe three fountains, runs E. through the marſh for about 30 yards, with very little increaſe of its water, but ſtill diſtinctly viſible, till it is met by the graſſy brink of the land deſcending from Sacala. By this it is turned gradually NE. and then due N.; and in the two miles in which it flows in that direction it receives many ſmall ſprings from ſtreams on each ſide; ſo that about this diſtance from the fountains it becomes a ſtream capable of turning a mill.

(4.) NILE, MR BRUCE'S DESCRIPTION OF THE WHOLE COURSE, CATARACTS, &c. OF THE. From the ſpot above deſcribed, the Nile turns to the W. and, after running over looſe ſtones occaſionally in that direction about 4 miles farther, there is a ſmall cataract of about ſix feet in height: after which it leaves the mountainous country, and takes its courſe through the plains of Goutto. Here it flows ſo gently that its motion is ſcarcely to be perceived, but turns and winds in its direction more than any river he ever ſaw; forming more than 20 ſharp angular peninſulas, in the ſpace of 5 miles. Here the ſoil is compoſed of a marſhy clay, quite deſtitute of trees, and very difficult to travel through; and where its ſtream receives no conſiderable addition. Iſſuing thence, however, it is joined by ſeveral rivulets which fall from the mountains on each ſide, ſo that it becomes a conſiderable ſtream, with high and broken banks covered with old trees for three miles. In its courſe it inclines to the NE. and winds very much, till it receives, firſt a ſmall river named *Diwa*, and then another named *Deeohha*, or *the river Dee*. Turning then ſharply to the E. it falls down another cataract, and about 3 miles below receives the Jemma, a pure and limpid ſtream, not inferior in ſize to itſelf. Proceeding ſtill to the N. it receives a number of other ſtreams, and at laſt croſſes the S. part of the lake Tzana or Dembea, preſerving the colour of its ſtream during its paſſage, and iſſuing out at the W. ſide of it in the territory of Dara. There is a ford, though very deep and dangerous, at the place where the Nile firſt aſſumes the name of a river, after emerging from the lake Dembea; but the ſtream in other places is exceedingly rapid: the banks in a few miles become very high, and are covered with the moſt beautiful and variegated verdure that can be conceived. It is now confined by the mountains of Begemder till it reaches Alata, where is the 3d cataract. This, ſays Mr Bruce, is the moſt magnificent ſight he ever beheld; but he thinks that the height has rather been exaggerated by the miſſionaries, who make it 50 feet; and after many attempts to meaſure it, he is of opinion that it is only 40 feet high. At the time he viſited it, the river had been pretty much ſwelled by rains, and fell in one ſheet of water, without any interval, for the ſpace of half an Engliſh mile in breadth, with ſuch a noiſe as ſtunned and made him giddy for ſome time. The river, for ſome ſpace both above and below the fall, was covered with a thick miſt, owing to the ſmall particles of the water daſhed up into the air by the violence of the ſhock. Though ſwelled beyond its uſual ſize, it retained its clearneſs, and fell into a natural baſon of rock; the ſtream appearing to run back againſt the foot of the precipice over which it falls with great violence; forming innumerable eddies and waves. Jerome Lobo pretends that he was able to reach the foot of the rock, and ſit under the prodigious arch of water ſpouting over it; but Mr Bruce pronounces this to be an abſolute falſehood. The noiſe of the cataract, which, he ſays, is like the loudeſt thunder, could not but confound and deſtroy his ſenſe of hearing; while the rapid motion of the water before his eyes would dazzle the ſight, make him giddy, and utterly deprive him of all his intellectual powers. "It was a moſt magnificent ſight (ſays Mr Bruce), that ages, added to the greateſt length of human life, would not deface or eradicate from my memory: it ſtruck me with a kind of ſtupor, and a total oblivion of where I was, and of every other ſublunary concern." About half a mile below the cataract, the Nile is confined between two rocks, where it runs in a narrow channel with impetuous velocity and great noiſe. At the village of Alata there is a bridge over it, conſiſting of one arch, 25 feet wide. This bridge is ſtrongly fixed into the ſolid rock on both ſides, and ſome part of the parapets ſtill remain. No crocodiles ever come to Alata, nor are any ever ſeen beyond the cataract. Below this tremendous water-fall the Nile takes a SE. direction, along the W. ſide of Begemder and

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and Amhara on the right, inclosing the province of Gojam. It receives a great number of ſtreams from both ſides, and after ſeveral turns takes at laſt a direction almoſt due N. and approaches within 62 miles of its ſource. Notwithſtanding the vaſt increaſe of its waters, however, it is ſtill fordable at ſome ſeaſons; and the Galla croſs it at all times without difficulty, either by ſwimming, or on goats ſkins blown up like bladders. It is likewiſe croſſed on ſmall rafts, placed on two ſkins filled with wind; or by twiſting their hands round the tails of the horſes who ſwim over; a method always uſed by the women who follow the Abyſſinian armies, and are obliged to croſs unfordable rivers. In this part of the river crocodiles are met with in great numbers. The Nile now ſeems to have forced its paſſage through a gap in ſome very high mountains, which bound the country of the Ganges, and falls down a cataract of 280 feet high; and immediately below this are two others, both of very conſiderable height. Theſe mountains run a great way to the W. where they are called *Dyre* or *Tegla*; the E. end of them joining the mountains of Kueira, where they are named *Fazuclo*. Theſe mountains are all inhabited by Pagan nations; but the country is leſs known than any other on the African continent. There is plenty of gold waſhed down from the mountains by the torrents in the rainy ſeaſon; which is the fine gold of Sennaar named *Tibber*. The Nile, now running cloſe by Sennaar in a direction nearly N. and S. makes afterwards a ſharp turn to the E. affording a pleaſant view in the fair ſeaſon, when it is brim-full, and indeed the only ornament of that bare and inhoſpitable country. Leaving Sennaar, it paſſes by many large towns inhabited by Arabs, of a white complection; then paſſing Gerri, and turning to the NE. it joins the Tacazze, paſſing, during its courſe through this country, a large and populous town named *Chendi*, probably the *Candace* of the ancients. Here Mr Bruce ſuppoſes the ancient iſland or peninſula of MEROE to have been ſituated. Having at length received the great river Atbara, the *Aſtaboras* of the ancients, it turns directly N. for about two degrees; then making a very unexpected turn W. by S. for more than two degrees in longitude, and winding very little, it arrives at Korti, the firſt town in Barabra, or kingdom of Dongola. From Korti it runs almoſt SW. till it paſſes Dongola, called alſo *Beja*, the capital of Barabra; after which it comes to Moſcho, a conſiderable town, and place of refreſhment to the caravans when they were allowed to paſs from Egypt to Ethiopia. Thence turning to the NE. it meets with a chain of mountains in about 22° 15′ Lat. N. where is the 7th cataract named *Jan Adel*. This is likewiſe very tremendous, though not above half as high as that of Alata. This courſe is now continued till it falls into the Mediterranean; there being only one other cataract in the whole ſpace, which is much inferior to any of thoſe already deſcribed.

(5.) NILE, NAMES OF THE. The ſuperior veneration paid to the E. branch of this celebrated river appears from the variety of names given to it, as well as from the import of theſe names; of which Mr Bruce gives a full account, but of which we ſhall only quote a part. By the Agows it is named *Gzeir*, *Geeſa*, or *Seir*; the firſt of which terms ſignifies a *god*. It is likewiſe named *Ab*, father; and has many other names, all of them implying the moſt profound veneration. In Gojam it is named *Abay*, which ſignifies *overflowing*. By the Gongas on the S. of mounts Dyre and Tagla, it is called *Dabli*; by thoſe on the N. *Kowaſs*, both of which imply *dog-ſtar*. Formerly the Nile had the name of *Siris*, both before and after it enters Beja, which the Greeks imagined was given to it on account of its black colour during the inundation; but Mr Bruce aſſures us that the river has no ſuch colour. He affirms, with great probability, that this name in the country of Beja imports the river of the *dog-ſtar*, on whoſe vertical appearance this river overflows; "and this idolatrous worſhip (ſays he) was probably part of the reaſon of the queſtion the prophet Jeremiah aſks: And what haſt thou to do in Egypt to drink the water of Seir, or the water profaned by idolatrous rites?" As for the firſt, it is only the tranſlation of the word *babar* applied to the Nile. The inhabitants of the Barabra to this day call it *Bahar el Nil*, or the ſea of the Nile, in contradiſtinction to the Red Sea, for which they have no other name than *Bahar el Moleeh*, or the Salt Sea. The junction of the three great rivers, the Nile flowing on the W. ſide of Meroe; the Tacazze, which waſhes the E. ſide, and joins the Nile at Maggiran in N. L. 17°; and the Mareb, which falls into this laſt ſomething above the junction, gives the name of *Triton* to the Nile. The ancient name *Egyptus* given it in Homer is ſuppoſed to have been derived from its black colour; but Mr Bruce derives it from *Y Gypt*, the name given to Egypt in Ethiopia, *i. e. the Country of Canals*.

(6.) NILE, NATURAL CAUSES OF THE INUNDATION OF THE. Under the article EGYPT, (§ 22.) we have ſo fully explained the cauſe of the annual inundation of the Nile, that, with regard to the phenomenon itſelf, nothing farther ſeems neceſſary to be added. We ſhall therefore only quote from Mr Bruce what he has ſaid concerning the mode of natural operation by which the tropical rains are produced; which are now univerſally allowed to be the cauſe of the annual overflowing of this and other rivers. The air is ſo much rarefied by the ſun, during the time that he remains almoſt ſtationary over the tropic of Capricorn, that the other winds loaded with vapours ruſh in upon the land from the Atlantic ocean on the weſt, the Indian ocean on the eaſt, and the cold Southern ocean beyond the Cape. Thus a great quantity of vapour is gathered, as it were, into a focus; and as the ſame cauſes continue to operate during the progreſs of the ſun northward, a vaſt train of clouds proceed from S. to N. which are ſometimes extended much farther than at other times. Thus for two years ſome white dappled clouds were ſeen at Gondar on the 7th of January; the ſun being then 34° from the zenith, and not the leaſt cloudy ſpeck having been ſeen for ſeveral months before. About the firſt of March, however, it begins to rain at Gondar, but only for a few minutes at a time, in large drops; the ſun being then about 5° diſtant

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8° distant from the zenith. The rainy season commences with violence at every place when the sun comes directly over it; and before it commences at Gondar, green boughs and leaves appear floating in the Bahar el Abiad or White River, which according to the accounts given by the Galla, our author supposes to take its rise in about 5° Lat. N. The rains therefore precede the sun only about 5°; but they continue and increase after he has passed it. In April all the rivers in the S. of Abyssinia begin to swell, and greatly augment the Nile, which is farther augmented by the vast quantity of water poured into the lake Tzana. On the first days of May, the sun passes the village of Gerri, which is the limit of the tropical rains; and though the sun still continues to operate with unabated vigour, all his influence cannot bring the clouds farther northward than this village; the reason of which Mr Bruce supposes to be the want of mountains to the northward. In confirmation of this, he observes, that the tropical rains stop at lat. 14° instead of 16° in the W. part of the continent. All this time, however, they continue violent in Abyssinia; and in the beginning of June the rivers are all full, and continue so while the sun remains stationary in the tropic of Cancer. This excessive rain, which would sweep off the whole soil of Egypt into the sea, were it to continue without intermission, begins to abate as the sun turns south-ward; and on his arrival at the zenith of each place, on his passage towards that quarter, they cease entirely: the reason of which is no less difficult to be discovered, than that of their coming on when he arrives at the zenith in his passage northward. The fact however is certain, and the time of the rains ceasing is exact to a single day; insomuch, that on the 25th Sept. the Nile is generally at its highest at Cairo, and begins to diminish every day after. Immediately after the sun has passed the line, he begins the rainy season to the southward; the rains constantly coming on with violence as he approaches the zenith of each place; but the inundation is now promoted in a different manner, according to the difference of circumstances in the situation of the places. From about 6° S. Lat. a chain of high mountains runs all the way along the middle of the continent towards the Cape of Good Hope, and intersects the S. part of the peninsula nearly in the same manner that the Nile does the northern. A strong wind from the S. stopping the progress of the condensed vapours, dashes them against the cold summits of this ridge of mountains, and forms many rivers, which escape in the direction either of east or west as the level presents itself. If this is towards the W. they fall down the sides of the mountains into the Atlantic, and if on the E. into the Indian ocean.—"The clouds (says Mr Bruce), drawn by the violent action of the sun, are condensed, then broken, and fall as rain on the top of this high ridge, and swell every river; while a wind from the ocean, on the E. blows like a monsoon up each of these streams, in a direction contrary to their current, during the whole time of the inundation; and this enables boats to ascend into the W. parts of Sofala, and the interior country to the mountains, where lies the gold. The same effect, from the same cause, is produced on the W. side towards the Atlantic; the high ridge of mountains being placed between the different countries W. and E. is at once the source of their riches, and of those rivers which conduct to the treasures, which would be otherwise inaccessible, in the E. parts of the kingdoms of Benin, Congo, and Angola. There are 3 remarkable appearances attending the inundation of the Nile. Every morning in Abyssinia is clear, and the sun shines. About 9 a small cloud, not above 4 feet broad, appears in the east, whirling violently round as if upon an axis; but, arrived near the zenith, it first abates its motion, then loses its form, and extends itself greatly, and seems to call up vapours from all the opposite quarters. These clouds having attained nearly the same height, rush against each other with great violence. The air impelled before the heaviest mass, or swiftest mover, makes an impression of its form on the collection of clouds opposite; and the moment it has taken possession of the space made to receive it, the most violent thunder possible to be conceived instantly follows, with rain: after some hours the sky again clears, with a wind at N.; and it is always disagreeably cold when the thermometer is below 63°. The 2d thing remarkable is the variation of the thermometer. When the sun is in the southern tropic, 36° distant from the zenith of Gondar, it is seldom lower than 72°; but it falls to 60°, and 63°, when the sun is immediately vertical; so happily does the approach of rain compensate the heat of a too scorching sun. The 3d is that remarkable stop in the extent of the rain northward, when the sun, that has conducted the vapours from the line, and should seem now more than ever to be in possession of them, is here over-ruled suddenly; till, on its return to Gorri, again it resumes the absolute command over the rain, and reconducts it to the Line, to furnish distant deluges to the southward." It has been said that the quantity of earth brought down by the Nile from Abyssinia is so great, that the whole land of Egypt is produced from it. This, however, cannot possibly be the case, as Mr Volney has proved in opposition to the opinion of Mr Savary and others. In Abyssinia there are very few rivers that run after November, as all of them stand in prodigious pools, which, by the heat of the sun, turn putrid, and on the commencement of the rains throw off their stagnant water into the Nile; but at last, the rains becoming constant, all this putrid matter is carried off, and the waters of the inundation become sweet and wholesome. The river then passing through the kingdom of Sennaar, the soil of which is a red bole, becomes coloured with that earth; and this mixture, along with the moving sand of the deserts, of which it receives a great quantity when raised by the wind, precipitates all the viscous and putrid matters which float in the waters; whence Mr Pocock judiciously observes, that the Nile is not wholesome when the water is clear and green, but when so red and turbid that it stains the water of the Mediterranean. The rains in Abyssinia, which cease about the 8th Sept. generally leave a sickly season in the low country; but the diseases produced by these rains are removed

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moved by others which come on about the end of October, and ceaſe about the 8th Nov. On theſe rains depend the latter crop of the Abyſſinians; and for theſe the Agows pray to the river, or the genius or ſpirit reſiding in it. In Egypt, however, the effect of them is ſeldom perceived; but in ſome years they prove exceſſive: and it has been obſerved that the Nile, after it has fallen, has again riſen in ſuch a manner as to alarm the whole country. This is ſaid to have happened in the time of Cleopatra, when it was ſuppoſed to preſage the extinction of the government of the Ptolemies; and in 1737 it was likewiſe imagined to portend ſome dreadful calamity. The quantity of rain by which all this inundation is occaſioned, varies conſiderably in different years: at leaſt at Gondar, where Mr Bruce had an opportunity of meaſuring it. In 1770 it amounted to 35½ inches: but in 1771 it amounted to no leſs than 41·355 inches from the vernal equinox to the 8th of September.

(7.) NILE, OBJECTIONS TO Mr BRUCE'S DISCOVERY OF THE SOURCES OF THE. The above very particular and elaborate account of the ſources of the Nile and of the courſe of the river given by Mr Bruce, (§ 3, 4.) hath not eſcaped criticiſm. We find him accuſed by the reviewers, not only of having brought nothing to light that was not previouſly known to the learned, but even of having revealed nothing which was not previouſly publiſhed in Guthrie's Geographical Grammar. This, however, ſeems by no means a fair and candid criticiſm. If the ſources of the Nile, as deſcribed by Mr Bruce, were known to the author of Guthrie's Grammar, they muſt likewiſe have been ſo to every retailer of geography ſince the time of the miſſionaries; which is not the caſe. If any thing *new* was publiſhed there previous to the appearance of Mr Bruce's work, it muſt have been *derived indirectly from himſelf*; of which clandeſtine method of proceeding that gentleman had frequent occaſion to complain in other caſes. As little can it be any diſparagement to Mr Bruce's labours, that he did not diſcover the ſources of the W. branches of the Nile, called the *White River*. Had he done ſo, it might next have been objected, that he did not viſit the ſprings of the Tacazze, or any other branch. That the origin of the White River was unknown to the ancients may readily be allowed; but ſo were the fountains of Geeſh, as evidently appears from the erroneous poſition of the ſources of the E. branch of the Nile laid down by Ptolemy. Our traveller, therefore, certainly has the merit, if not of diſcovering the ſources, at leaſt of confirming the accounts which the Jeſuits have given of the ſources of the *Nile*; and of which the White River, whether greater or ſmaller, ſeems to be accounted only a branch. Still, however, it is urged, that thoſe ſources of the Nile, which were ſo much the objects of ancient curioſity, have never yet been ſeen by any European. This ſeems to be fully proved by Major Rennel, in the *Appendix to Mr Mungo Park's Travels*, and by Mr Browne in his account of the *Bahr el Abiad*, and *Dar-Fur*, or *Soudan*. (See SOUDAN.) Mr Bruce, (they argue) owns that the Nile, which waters Egypt, is the confluence of two ſtreams, and that the Weſtern, called *Bahr el Abiad*, or the WHITE RIVER, is the largeſt of the two. Were a man to travel (they urge) from Cairo up the banks of the Nile, in queſt of its ſource, he would doubtleſs, when arrived at its diviſion into two channels, continue his journey up the greater; for what could induce him to turn aſide with the leſs?—Not the *name*, for neither the leſs nor the greater has, by itſelf, the name which, in Egypt, is given to both united. The former, which has its ſources in Abyſſinia, is there called the *Abay* or *Abavi*; and in other countries through which it runs, the *Bahr el Aſrek*; the latter is, from its ſource to its junction with the Abay, called *Bahr el Abiad*. Pliny believed, that the Nile came from the W. and Ptolemy ſays, that its remote ſource is in the MOUNTAINS OF THE MOON. But this Nile muſt be the White River, which riſes to the W. of Abyſſinia, and according to Abulfeda, in the mountains of *Komri* or *Kummeri*; which in Arabic, ſignifies *lunar*, being the adjective of *Kummer* the *Moon*. In conformity with this ancient account of the ſource of the Nile, Mr Ledyard was told at Cairo, by merchants from Dar-Fur, that the Nile has its fountains in their country, at 55 days journey W. of Sennaar which brings them to the Komri of Abulfeda, who, with Ptolemy and Edreſi, places the head of the Nile in a country far removed from Abyſſinia. Ptolemy mentions both branches: and while he deſcribes the eaſtern ſo that it cannot be taken for any other than the Abyſſinian branch, or the Nile of Bruce and the Portugueſe Jeſuits, mentions a larger branch flowing from a more diſtant ſource, ſituated to the SW. which can be no other than the *White River* of Bruce, the *Bahr el Abiad* of Ledyard and Browne. The apparent difference in the accounts of theſe two laſt travellers is eaſily reconciled. Ledyard ſays the ſources riſe in Dar-Fur; Browne places them near *Donga*, a city S. of Dar-Fur. But as the merchants, who trade between Donga and Cairo, always came with the Dar-Fur caravan, he might eaſily miſtake them for Dar-Furians from that circumſtance. Browne ſays the country about Donga is very mountainous, and that where the river riſes there are 40 hills called *Kumri*, from which iſſue many ſprings, which unite and form the Bahr el Abiad. Major Rennel places thoſe mountains of the Moon between 24° 30′ and 30° 25′ Lon. E. and between 5° 40′ and 8° 10′ Lat. N. Browne's Lon. and Lat. are nearly the ſame; while Geeſh, the ſource of Bruce's Nile, lies about Lon. 37° E. and between 10° and 11° Lat. N.

NILEUS, the 2d ſon of CODRUS, the patriotic king of Attica, who, after the abolition of monarchy at Athens, led a colony of Ionians to Aſia, where he built Epheſus, Miletus, Prien, Colophon, Myus, Teos, Lebedos, Clazomenæ, &c. *Pauſ.* vii. c. 2.

* NILL. *n. ſ.* The ſhining ſparks of graſs in trying and melting the ore.

* *To* NILL. *v. a.* [from *ne will*, *nillan*, Saxon.] Not to will; to refuſe; to reject.—

Certes, ſaid he, I *will* thine offer'd grace. *Spenſ.*

If now, with man and wife to will and *nill*
The ſelf ſame things, a note of concord be,
I know no couple better can agree. *Johnſon.*

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NILO-

NILOMETER, or NILOSCOPE, } an inſtrument uſed among the ancients to meaſure the height of the water of the Nile in its overflowings; anciently called *Mikeas*, or rather *Mykeas*, from Μυκαω to roar, or make a hollow ſound, alluding to the noiſe of the waters. The word Nilometer comes from Νειλος, *Nile*, (and that from νεα ιλυς, *new mud*, or as others have it, from νεω, I flow, and ιλυς, mud), and μετρον, *meaſure*. The Greeks more ordinarily call it Νειλοσκοπιον. The nilometer is ſaid, by ſeveral Arabian writers, to have been firſt ſet up, for this purpoſe, by Joſeph during his regency, in Egypt: the meaſure of it was 16 cubits, this being the height of the increaſe of the Nile, which was neceſſary to the fruitfulneſs of Egypt. From the meaſure of this column, Dr Cumberland deduces an argument, to prove that the Jewiſh and Egyptian cubits were of the ſame length. In the late French king's library is an Arabic treatiſe on the nilometers, entitled *Neil fi alnal al Nal;* wherein are deſcribed all the overflowings of the Nile, from the firſt year of the Hegira to the 875th. Herodotus mentions a column erected in a point of the Delta, to ſerve as a nilometer; and there is ſtill one of the ſame kind in a moſque of the ſame place. As all the riches of Egypt ariſe from the inundations of the Nile, the inhabitants uſed to ſupplicate them of Serapis; and committed the moſt execrable crimes, as actions of religion, to obtain his favour. This occaſioned Conſtantine expreſsly to prohibit theſe ſacrifices, &c. and to order the nilometer to be removed into the church; whereas, till that time, it had been in the temple of Serapis. Julian the apoſtate had it replaced in the temple, where it continued till the time of Theodoſius the Great. The moſt conſiſtent account, however, which till lately we had of the nilometer, is given by the celebrated traveller Mr Bruce, in his travels, Vol. 3d. (See EGYPT, § 22.)—On the night of St John, when, by the falling of the dew, they perceive the rain water from Ethiopia mixed with the Nile at Cairo, they begin to announce the elevation of the river, having then five pecks of water marked on the nilometer, and two unmarked for the ſludge, of which they take no notice. Their firſt proclamation, ſuppoſing the Nile to have riſen 12 digits, is 12 from 6, or wants 12 digits to be ſix pecks. When it has riſen 3 more, it is 9 from ſix; and ſo on till the whole 18 be filled, when all the land of Egypt is fit for cultivation. Several canals are then opened, which convey the water into the diſtart, and hinder any farther ſtagnation on the fields. There is indeed a great deal of more water to come from Ethiopia; but were the inundation ſuffered to go on, it would not drain ſoon enough to fit the land for tillage: and to guard againſt this miſchief is the principal uſe of the nilometer, though the Turkiſh government makes it an engine of taxation. From time immemorial the Egyptians paid, as tribute to the king, a certain proportion of the fruit of the ground; and this was anciently aſcertained by the elevation of the water on the nilometer, and by the menſuration of the land actually overflowed. But the Saracen government, and afterwards the Turkiſh, taxed the people by the elevation alone of the water, without attending to its courſe over the country, or the extent of the land actually overflowed; and this tax is ſometimes cruelly oppreſſive. But the lateſt and moſt accurate account of the nilometer is that preſented to the National Inſtitute of France, (See NATIONAL INSTITUTE), by Citizen Monge in Aug. 1801. It was entitled, "*A Memoir on the Mekyas of the iſle of Raoudah, by Citizen Lepere,*" of the Inſtitute of Cairo. "This monument, conſtructed by the Caliph Almamon in the year 211 of the Hegira, is a well which communicates, by a ſubterraneous canal, with the Nile, and whoſe waters are conſequently always on a level with thoſe of the river. In the middle of the well riſes a column of marble, divided into cubits, palms and digits, which indicates the riſe of the water. The obſervation is made commodiouſly by means of a ſtaircaſe, which winds about the interior, next to the inner wall of the well. At the arrival of the French, this well was almoſt filled up by the depoſits of the Nile, ſo that it only communicated with the river by filtration. Citizen Lepere has thoroughly cleaned it; the column has been entirely laid bare, and the diviſions have been found more equal than has been commonly reported. The medium ſize of each of the 16 cubits is 0° 54′.—To perpetuate the utility of prior obſervations by the Mekyas, in caſe this monument ſhould happen to be deſtroyed, Citizen Lepere preſents to poſterity an invariable rule, to appretiate the ulterior exhauſtments of the Nile, and of the level of the valley. This point is taken at the ſocle, or foundation, at the N. angle of the calcareous layer of ſtratum, which ſerves for a baſe to the great pyramid; and it is more elevated by 42° 5′ than the chapiter of the column of the Mekyas."—We need only add to this extract from M. Monge's memoir, that the orthography of theſe learned Frenchmen, in writing the name *Mekyas*, inſtead of *Mykeas*, ſeems not ſo correct as that we have given above; as it can only be derived from μηκαομαι, *balo*, to bleat like a ſheep or goat; and every perſon muſt allow, that the roaring of a river reſembles the lowing of oxen or roaring of bulls, much more than the bleating of theſe animals.

* *To* NIM. *v. a.* [*nemen*, Dutch, to take.] To take. In cant, to ſteal.—

They'll queſtion Mars, and by his look
Detect who 'twas that *nimm'd* a cloak. *Hudib.*

—They could not keep themſelves honeſt of their fingers, but would be *nimming* ſomething or other for the love of thieving. *L'Eſtrange.*

NIMAAMA. See MONEMUGI, N° 1.

* NIMBLE. *adj.* [from *nim* or *numan*, Sax. tractable.] Quick; active; ready; ſpeedy; lively; expeditious.—

They being *nimbler* jointed than the reſt,
And more induſtrious, gathered more ſtore. *Spenſ.*
You nimble lightnings, dart your blinding flames
Into her ſcornful eyes. *Shak. K. Lear.*
You have dancing ſhoes
With *nimble* ſoles. *Shak. Romeo and Juliet.*
His off'ring ſoon propitious fire from heaven
Conſum'd with *nimble* glance. *Milton.*
Thro' the mid ſeas the *nimble* pinnace ſails,
Aloof from Crete. *Pope.*

* NIMBLENESS. *n. ſ.* [from *nimble*.] Quickneſs;

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neſs; activity; ſpeed; agility; readineſs; dexterity; celerity; expedition; ſwiftneſs.—The hounds were ſtraight uncoupled, and ere long the ſtag thought it beſt to truſt to the *nimbleneſs* of his feet, than to the ſlender fortifications of his lodging. *Sidney.*—Himſelf ſhewing at one inſtant both ſteadineſs and *nimbleneſs*. *Sidney.*—The wiſdom of God is ſaid to excel in *nimbleneſs* or agility, to pierce into all intellectual, pure and ſubtile ſpirits. *Hooker.*—

We, lying ſtill,
Are full of reſt, defence and *nimbleneſs*. *Shak.*

—Ovid ranged over all Parnaſſus with great *nimbleneſs* and agility; but as he did not climb the upper part of the hill, he was roving about the bottom. *Addiſon's Guardian.*

* NIMBLESS. *n. ſ.* Nimbleneſs. *Spenſer.*

* NIMBLE-WITTED. *adj.* [*nimble* and *wit.*] Quick; eager to ſpeak.—Sir Nicholas Bacon, when a certain *nimble-witted* counſellor at the bar, who was forward to ſpeak, did interrupt him often, ſaid unto him, There is a great difference betwixt you and me; a pain to me to ſpeak, and a pain to you to hold your peace. *Bacon.*

* NIMBLY. *adv.* [from *nimble.*] Quickly; ſpeedily; actively.—

He capers *nimbly* in a lady's chamber,
To the laſcivious playing of a lute. *Shak.*

The air
Nimbly and ſweetly recommends itſelf. *Shak.*

Moſt legs can *nimbly* run. *Davies.*

—The liquor we poured from the cryſtals, and ſet it in a digeſting furnace to evaporate more *nimbly*. *Boyle.*

NIMBURG, a town of Bohemia, in Boleſlaw, near the Elbe. It was taken by the Saxons in 1634, by aſſault. It lies 26 miles ENE. of Prague, and 70 SE. of Dreſden.

NIMBUS, in antiquity, a circle obſerved on certain medals, around the heads of ſome emperors; anſwering to the circles of light drawn round the images of ſaints.

NIMECK, a town of Germany, in Saxony, 20 miles NE. of Wittemburg.

NIMEGUEN, a large, handſome, and ſtrong town of Holland, in the department of the Rhine and late province of Dutch Guelderland, with a citadel, an ancient palace and ſeveral forts. It is noted for the peace concluded there in 1679. It has a magnificent town-houſe, and is ſeated on the Vahal or Wahal, between the Rhine and the Maeſe. It is the utmoſt eaſtern boundary of the Netherlands. It contains two Dutch churches, a French Calviniſt and Lutheran church, 5 Popiſh, and ſeveral hoſpitals. It was once a Hanſe town and an imperial city. It has a canal to Arnheim, and conſiderable trade to Germany, and the other provinces, in fine beer, cattle, and butter, which is extremely good. It was taken by the French under Pichegru, with 1100 priſoners, after a ſiege of 8 days, and defeating the Britiſh out-poſts, on the 7th Nov. 1794. It was greatly damaged by the inundations in Feb. 1799. Lon. 5. 50. E. Lat. 51. 55. N.

(1.) NIMES, Nems, or Mihomic, a town of Bohemia; in Boleſlaw, 38 miles N. of Prague, and 44 SE. of Dreſden.

(2.) Nimes, or Nismes. See Nismes.

NIMETULAHITES, a kind of Turkiſh monks, ſo called from their founder Nimetulahi, famous for his doctrines and the auſterity of his life.

NIMGOUTA, a town of Chineſe Tartary, in Kirin; 640 miles ENE of Pekin.

* NIMIETY. *n. ſ.* [*nimietas*, ſchool Lat.] The ſtate of being too much.

NIMIQUAS, a nation of S. Africa, divided into 2 tribes, called by Vaillant *the Greater* and *Leſs Nimiquas*.

1. Nimiquas, the Greater, inhabit a country, extending from the mountains of Camis to the ſea on the W. *i. e.* from Lon. 15° 25′ to 18° 25′ E. of London, and between 25° and 28° Lat. S. It is barren; yet the people are tall, ſlender, and handſome, generally about 5 feet 10 inches. The men, however, are dull and ſtupid, but the women are lively and amorous. The young girls will barter their favours for a ſingle pipe of tobacco; but the married women are modeſt and reſerved. Kolben ſays, that when they bear twins they kill one of them; but Vaillant contradicts this and other falſe reports. The men, however, are great cowards, and uſe poiſoned arrows in battle; a ſtrong evidence of cowardice. They alſo breed up *war oxen*, which prove very formidable to their enemies. They have alſo very large bucklers, as high as thoſe who bear them, and which completely conceal them. Yet with all theſe means of defence, the very name of the Houzouanas will make them tremble. (See Houzouanas.) Their muſic is the ſame with that of the other Hottentots; but their dancing is "ſo devoid of grace and hilarity, that were it not for the extreme gaiety of the women, it might be called *the dance of the dead.*" They are fond, however, of games of chance and calculation, which require patience and reflection.

2. Nimiquas, the Leſs, inhabit a country nearly in the ſame longitude with the above, but lying in Lat. between 28° 12′ and 29° 36′ S. The number of inhabitants does not exceed 6000, and this is annually diminiſhing, by the frequent attacks of the Boshies-men, and the aridity of the ſoil and climate, which is ſo great that ſometimes a whole year paſſes without rain. This aridity and conſequent ſterility often oblige the Nimiquas to change their reſidence. They are not ſo tall as their neighbours on the E. (N° 1.) They believe in witchcraft; and Vaillant mentions an interview he had with an old witch, named *Kakoes*, who had a great aſcendancy, not only over the Nimiquas, but even over the ſavage Boſhies-men, who would never plunder the territory where ſhe reſided; but have often, when threatened by her, ſingle and alone, in their own retreats, with vengeance, been prevailed on to reſtore their ſtolen property. She procured 6 ſheep for Vaillant and his company. The female Nimiquas received his Hottentots with great kindneſs. They wear bracelets, necklaces and ear-rings of copper, ſome of them neatly finiſhed; alſo glaſs and copper beads ſtrung on their garments.

NIMMEGUEN. See Nimeguen.

* NIMMER. *n. ſ.* [from *nim.*] A thief; a pilferer.

NIMMINSCH, or Nimptschen, a town of Saxony, in Leipſic, 2 miles NNE. of Grimma.

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NIMPO, a city of the firſt rank, and a ſea-port of China, in the province of Che-kiang, ſeated on the eaſtern ſea of China, over againſt Japan, at the confluence of two ſmall rivers; which, after their union, form a channel that reaches to the ſea, and is deep enough to bear veſſels of 200 tons. The walls are 5000 paces in circumference, and built with freeſtone. There are five gates, beſides two water-gates for the paſſage of barks into the city; a tower ſeveral ſtories high, built of bricks; and a long bridge of boats, faſtened together with iron chains, over a very broad canal. This city is commanded by a citadel built on a very high rock, by the foot of which all veſſels muſt neceſſarily paſs. The Chineſe merchants of Siam and Batavia go to this place yearly to buy ſilks, which are the fineſt in the empire. They have alſo a great trade with Japan, which is two days ſail diſtant; and to which they carry ſilks, ſtuffs, ſugar, drugs, and wine, and bring back copper, gold, and ſilver. Lon. 122. 0. E. Lat. 30. 0. N.

NIMPTSCH, a town of Sileſia, in Brieg.

NIMPTSCHEN. See NIMMINSCH.

NIMRITZ, a town of Upper Saxony, 4 miles SW. of Neuſtadt.

NIMROD, the ſixth ſon of Cuſh, and probably much younger than any of his brothers; for Moſes mentions the ſons of Raamah, his fourth brother, before he ſpeaks of him. What the ſacred hiſtorian ſays of him is ſhort; and yet he ſays more of him than of any other of the poſterity of Noah before Abraham. He tells us, that "Nimrod began to be a mighty one in the earth;" that he was a "mighty hunter before the Lord," even to a proverb; and that "the beginning of his kingdom was Babel, and Erech, and Accad, and Calneh, in the land of Shinar." Authors have taken a great deal of pains to find Nimrod in profane hiſtory. Some have imagined him to be the ſame with Belus, the founder of the Babyloniſh empire; others with Ninus, the firſt Aſſyrian monarch: ſome think he was Evechous, the firſt Chaldean king; and others perceive a great reſemblance between him and Bacchus. Some Mohammedan writers ſuppoſe him to have been Zohak, a Perſian king of the firſt dynaſty; others Cay Cans, the ſecond king of the ſecond race; and ſome of the Jews ſay he is the ſame with Amraphel, the king of Shinar, mentioned by Moſes. Some of the rabbins pretend he was ſlain by Eſau, whom they abſurdly make his contemporary. There is a tradition that he was killed by the fall of the tower of Babel: others ſay, that as he led an army againſt Abraham, God ſent a ſquadron of gnats, which deſtroyed moſt of them, and particularly Nimrod, whoſe brain was pierced by one of thoſe inſects.

* NINCOMPOOP. *n. ſ.* [A corruption of the Latin *non compos.*] A fool; a trifler.—An old ninnyhammer, a dotard, a *nincompoop*, is the beſt language ſhe can afford me. *Addiſon.*

(1.) * NINE. *n. ſ.* [*nium*, Gothick; *nigon*, Sax.] One more than eight; one leſs than ten.—

The weyward ſiſters
Thus do go about, about,
Thrice to thine and thrice to mine,
And thrice again, to make up *nine*. *Shak.*

—A thouſand ſcruples may ſtartle at firſt, and yet in concluſion prove but a *nine* days wonder. *L'Eſtrange.*—

At ninety-*nine* a modern and a dunce. *Pope.*—The faults are *nine* in ten, owing to affectation. *Swift.*

(2.) NINE is the laſt of the radical numbers or characters, from the combination of which any definite number, however large, may be produced. "It is obſerved by arithmeticians (ſays Hume), that the products of 9 compoſe always either 9 or ſome leſſer products of 9, if you add together all the characters of which any of the former products is compoſed: thus of 18, 27, 36, which are products of 9, you make 9, by adding 1 to 8, 2 to 7, 3 to 6. Thus 369 is a product alſo of 9; and if you add 3, 6, and 9, you make 18, a leſſer product of 9." See *Hume's Dialogues on Nat. Relig.* p. 167, 168, &c. 2d edit.

(3.) NINE, in geography. See NEN.

* NINEFOLD. *n. ſ.* [*nine* and *fold.*] Nine times; any thing nine times repeated.—

This huge convex of fire,
Outrageous to devour, immures us round
Ninefold. *Milton.*

NINE-MILE HOUSE, the name of 2 ſmall towns in Ireland: 1. in Kildare: 2. in Tyrone, between Dungannon and Omagh.

* NINEPENCE. *n. ſ.* [*nine* and *pence.*] A ſilver coin valued at nine pence.—

Three ſilver pennies, and a *nine-pence* bent. *Gay.*

* NINEPINS. *n. ſ.* [*nine* and *pin.*] A play where nine pieces of wood are ſet up on the ground, to be thrown down by a bowl.—A painter made bloſſoms upon trees in December, and ſchoolboys playing at *nine-pins* upon ice in July. *Peacham.*—

For as when merchants break, o'erthrown
Like *nine-pins*, they ſtrike others down. *Hudib.*

* NINESCORE. *adj.* [*nine* and *ſcore.*] Nine times twenty.—Eugenius has 200l. a-year, but never values himſelf above *nine-ſcore*, as not thinking he has a right to the tenth part, which he always appropriates to charitable uſes. *Spectator.*

* NINETEEN. *adj.* [*nigontyne*, Sax.] Nine and ten; one leſs than twenty.—*Nineteen* in twenty of perplexing words might be changed into eaſy ones, ſuch as occur to ordinary men. *Swift.*

NINETEEN-MILE HOUSE, a town of Ireland, in Kildare, Leinſter.

(1.) * NINETEENTH. *adj.* [*nigonteotha*, Sax.] The ordinal of nineteen; the ninth after the tenth.—In the *nineteenth* year of king Nebuchadnezzar king of Babylon, came Nebuzar-adan. 2 *Kings* xxv. 8.

(2.) NINETEENTH, in muſic. See MUSIC, *Deſin.* § 14.

* NINETIETH. *adj.* [*hundnigonteogotha*, Sax.] The ordinal of ninety; the tenth nine times told.

* NINETY. *adj.* [*hundnigontig*, Saxon.] Nine times ten.—Enos lived *ninety* years, and begat Cainan. *Gen.* v. 9.

(1.) NINETY-SIX, a diſtrict of S. Carolina, bounded on the E. by thoſe of Camden and Orangeburg; on the N. by the Enoree; and SW. by the Savannah; comprehending the counties of Edgefield, Abbeville, Laurens, and Newbury. It is 70 miles long and 52 broad; and contained 33,622 citizens and 7543 ſlaves in 1795. It ſends

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senators and 22 representatives to the legislature, and one member to congress. The climate is very salubrious, and the soil fertile.

(2.) NINETY-SIX, the capital of the above district, called also *Cambridge*. See CAMBRIDGE, N° 4. In May 1781, it was closely besieged by Gen. Greene, and bravely defended by the British, under Col. Cruger, who at last obliged the republicans to retreat. (See AMERICA, § 324.) It is 49 miles N. of Augusta in Georgia.

NINEVEH, in ancient geography, the capital of Assyria, founded by ASHUR, the son of Shem. (Gen. x. 11.) It was one of the most ancient, famous, potent, and large cities of the world. It is difficult exactly to fix the time of its foundation; but it could not be long after the building of Babel. It was situated upon the banks of the Tigris; and in the time of the prophet Jonas, who was sent thither under Jeroboam II. king of Israel, and, as Calmet thinks, under the reign of Pul, father of Sardanapalus, king of Assyria, Nineveh was a very great city, its circuit being three days journey. (Jonah iii. 3.) Diodorus Siculus, who has given us the dimensions of it, says it was 480 stadia in circumference, or 47 miles; and that it was surrounded with lofty walls and towers; the former being 200 feet in height, and so very broad, that three chariots might drive on them a-breast; and the latter 200 feet in height, and 1500 in number. Strabo allows it to have been much greater than Babylon. Diodorus Siculus was, however, certainly mistaken, or rather his transcribers, in placing Nineveh on the Euphrates; since all historians and geographers who speak of it, tell us that it stood on the Tigris. At the time of Jonah's mission, it was so populous, that it was reckoned to contain more than 120,000 persons who could not distinguish their right hand from their left (Jonah iv. 11.), which is generally explained of young children; so that it is computed that the inhabitants of Nineveh were then above 600,000 persons. Nineveh was taken by Arbaces and Belesis, A. M. 3257, in the reign of Sardanapalus, in the time of Ahaz king of Judah, and about the time of the foundation of Rome. It was taken a 2d time by Astyages and Nabopolassar, from Chynalydan king of Assyria, in 3378. After this time, Nineveh no more recovered its former splendour. It was so entirely ruined in the time of Lucianus Samosatensis, who lived under the emperor Adrian, that no footsteps of it could be found, nor so much as the place where it stood. However, it was rebuilt under the Persians, and destroyed again by the Saracens about the 7th century. Profane historians tell us, that Ninus first founded Nineveh; but the scripture assures us that it was Asshur. (Gen. x. 11.) The sacred authors make frequent mention of this city; and Nahum and Zephaniah foretold its ruin in a very particular and pathetic manner. It was several times besieged. The first attempt was made by PHRAORTES, the 2d king of the Medes; but it failed, and he perished in it, in his 22d year. (See MEDIA.) His son Cyaxares I. though he also failed in two attempts, was more successful in a third, and, by the assistance of Nebuchadnezzar, took and demolished it. Modern travellers say, that the ruins of ancient Nineveh may still be seen on the E. banks of the Tigris, opposite to Mousul. (See MOUSUL.) This assertion, however, is far from probable; for every trace of it seems to have so totally disappeared, even so early as A. D. 627, that the vacant space afforded a spacious field for the celebrated battle between the emperor Heraclius and the Persians. There are few things in ancient history which have more puzzled the learned world, than to determine the spot where this city stood. Mr Ives says, that some imagine it stood near Jonah's tomb: others, however, place it some hours journey up the Tigris. These different opinions, however, seem perfectly reconcileable; for ancient Nineveh comprehended the whole ground which lies between these two ruined places. Mr Ives adds, that "what confirms this conjecture is, that much of this ground is now hilly, owing to the rubbish of the ancient buildings. There is one mount of 200 or 300 yards square, which stands some yards NE. of Jonah's tomb, whereon it appears a fortification once stood."

NING, two towns of China, of the 2d rank: 1. in Cheng-si, 500 miles SW. of Peking: 2. in Yun-nan, 1182 miles SSW. of Peking.

NINGO, a kingdom of Africa, on the Gold Coast, with its capital; 45 m. WSW. of the Volta.

NING-PO, an excellent port, on the E. coast of China, opposite to Japan; called by the Europeans *Liampo*. The silks manufactured at Ning-po are much esteemed in foreign countries, especially in Japan, where the Chinese exchange them for copper, gold, and silver. This city has 4 others under its jurisdiction, besides a great number of fortresses.

(1.) NING-YUEN, a town of China, in Chen-si.

(2.) NING-YUEN, a river of Chinese Tartary, which runs into the Gulf of Lead-tong, below Ning-Yuen.

NINIAN, or NINIA, commonly called *St Ninian*, a holy man among the ancient Britons. He resided at or near a place called by Ptolemy *Lucopibia*, and by Bede *Candida Rosa*; but the English and Scots called it *Whitborne*. He is said to have been the first who converted the Scots and Picts to the Christian faith, during the reign of Theodosius II. Bede says, he built a church dedicated to St Martin, in a style unknown to the Britons of that time; and adds, that during his time the Saxons held this province (*Galiovidio*, now *Galloway*); and that as, in consequence of the labours of this saint, the converts to Christianity increased, an episcopal see was established there. Dr Henry says, "he was a Briton of noble birth and excellent genius. After he had received as good an education at home as his own country could afford, he travelled for improvement, and spent several years at Rome, then the chief seat of learning, as well as of empire. From thence he returned into Britain, and spent his life in preaching the gospel in the most uncultivated parts of it, with equal zeal and success." Buchanan says, that in the reign of K. Dongard, about A. D. 452, the Scots clergy being infected with Pelagianism, St Ninian was sent into Scotland by Palladius to oppose it, and became highly distinguished by his learning and zeal. *Buch.* lib. v. *Stat. Acc.* xviii. 385.

(1.) NINIANS,

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(1.) NINIAN's, ST, a parish of Scotland, in Stirlingshire, anciently called *Eggles*, 10 miles long at an average, and 6 broad; though from its E. to its W. extremity it measures above 15 miles. The surface and soil are of 3 different kinds; carse, dry, and moor lands. The general appearance is beautiful; the hills and valleys being ornamented by numberless inclosures, thriving plantations, various villages, and gentlemens seats, along the banks of the meandering Forth. Besides that river, which bounds it on the N. the parish is watered by the Endrick, the Bannock, and the Carron, and Loch Coulter, a lake 2 miles in circumference. Several years ago, a water spout fell on the lands of Touch, drowned several people, and carried off a bridge, 2 houses, and part of the minister's glebe; and two shocks of an earthquake were felt in one night, about 1762. There are 3 coal works, which raise about 600 tons a week. Limestone also abounds, of the best quality, containing but one boll of sand in 96 of lime. There were 6 distilleries in 1792. Barley, oats, wheat, beans, and potatoes, are the chief crops. There are 4 tanneries, and a cotton manufacture. The population, in 1792, was 7079; increase 588 since 1755. Numberless battles were anciently fought in this parish; but the 3 most memorable were, 1. that on the 11th Sept. 1297, which was completed at Torwood, wherein Sir W. Wallace defeated the English under Cressingham and Surry; 2. that of Bannockburn, wherein they were completely routed by Robert Bruce; (See BANNOCKBURN;) and, 3. that of Sauchie-burn, one mile distant, fought on the 11th June 1488, which ended in the flight and murder of K. James III. at *Beaton's Mill*, which is still standing. (See SCOTLAND.) In the muirland, near the source of the Carron, are the ruins of a castle, once the residence of the patriotic Sir John Graham, who fell in the battle of Falkirk. See GRAHAM, N° 5.

(2.) NINIAN's, ST, a small town in the above parish, about 2 miles SE. of Stirling. Its church had been occupied by the rebels, in 1745, as a powder-magazine; who, on their return, blew it up in such haste, as to destroy some of their own people, and about 15 spectators. The steeple, however, stood entire, and still stands, at a considerable distance from the new church. The population is about 3500. The chief manufactures are leather, nails, cottons, and tartans.

*NINNY. *n. f.* [*nino*, a child, Spanish.] A fool; a simpleton.—

What a pied *ninny*'s this? *Shak. Tempest.*

The dean was so shabby, and look'd like a *ninny*,

That the captain suppos'd he was curate. *Swift.*

NINNYHAMMER. *n. f.* [from *ninny*.] A simpleton.—Have you no more manners than to rail at Hicus, that has saved that clod-pated, numskull'd, *ninny-hammer* of yours from ruin, and all his family. *Arbuthnot's John Bull.*

NINON DE L'ENCLOS. See L'ENCLOS.

NINOVE, a town of France, in the dep. of the Dyle, and ci-devant prov. of Austrian Flanders, seated on the Dender; with a handsome church and an abbey. It was anciently governed by its own lords, and was fortified with a castle, walls, and 5 gates, in 1194, now demolished. It suffered much in former wars, having been often sacked and pillaged. It lies 15 miles W. of Brussels, and 18 SE. of Ghent. Lon. 4. 5. E. Lat. 50. 52. N.

(1.) * NINTH. *adj.* [*negotha*, Sax.] That which precedes the tenth; the first after the eighth; the ordinal of nine.—Upon a strict observation of many, I have not found any that see the *ninth* day. *Brown's Vulgar Errours.*

(2.) NINTH, in music. See INTERVAL, § III. and MUSIC, *Defin.* § 14.

NINUS, the first or second king of Assyria, the son of Belus, or Athur. He enlarged Nineveh and Babylon; conquered Zoroaster king of the Bactrians; married Semiramis of Ascalon; subdued almost all Asia; and died, after a glorious reign of 52 years, about 1150 B. C. See ASSYRIA, § 2; and SEMIRAMIS.

NINYAS, the son of NINUS and SEMIRAMIS, and successor of the latter in the kingdom of Assyria, whom he is said to have put to death for her incestuous attachment to him. Little is recorded of his reign, but that he entrusted the care of his government to his favourites, and began that inglorious course of luxury and effeminacy, which, being pursued by his successors with increasing folly and extravagance, ended in the ruin of the empire under SARDANAPALUS. See ASSYRIA, § 2.

NIO, an island of the Archipelago, anciently called *Ino*, *Ios*, and *Dios*, between Naxia on the N. Armago on the E. Santerino on the S. and Sikino on the W. about 35 miles in circumference. It is remarkable for the tomb of Homer, who died here in his passage from Samos to Athens: and it is no less remarkable for the uncommon hospitality of its inhabitants, who continue to exemplify in modern times the genuine hospitality and kindness to strangers practised by the ancient patriarchs, without accepting of the smallest recompense. These virtues are equally practised by all the natives, Grecks as well as Turks. The island is well cultivated, and not so steep as the other islands; and the wheat is excellent, but oil and wood are scarce. It is subject to the Turks. Lon. 25. 53. E. Lat. 36. 35. N.

NIOBE, in fabulous history, the daughter of Tantalus, and wife of Amphion king of Thebes, by whom she had 7 sons and 7 daughters. Having become so proud of her fertility and high birth as to prefer herself before Latona, and to slight the sacrifices offered up by the Theban matrons to that goddess, Apollo and Diana, the children of Latona, resented this contempt. The former slew the male children, and the latter the female; upon which Niobe was struck dumb with grief, and remained without sensation. Cicero is of opinion, that on this account the poets feigned her to be turned into stone. The story of Niobe is beautifully related in Ovid's Metamorphoses, Lib. vi. Fab. v. Among the relics of ancient statuary is preserved a beautiful statue of Niobe. With her right hand she clasps one of her little daughters, who throws herself into her bosom; which attitude equally expresses the ardent affection of the mother, and that natural confidence which children have in the protection of a parent. The whole is executed in such a wonderful manner, that

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that this, with the other ſtatues of her children, is reckoned by Pliny among the moſt beautiful works of antiquity; but he doubts to which of the Grecian artiſts he ought to aſcribe the honour of them, whether to Scopas or Praxiteles. We have no certain information at what period this celebrated work was tranſported from Greece to Rome, nor where it was firſt erected. Flaminius Vacca ſays, that all theſe ſtatues were found in his time, near the gate of St John, and that they were afterwards placed by the Grand Duke Ferdinand in the gardens of the Villa de Medici, near Rome.

NION, a town of Switzerland, capital of a late extenſive bailiwic, in the canton of Berne, near the lake of Geneva; 11 miles N. of Geneva. Lon. 23. 52. E. of Ferro. Lat. 46. 24. N.

NIONS. See NYONS.

NIORT, a conſiderable trading town of France, capital of the dep. of the Two Sevres, and late prov. of Poitou. Their chief manufactures are confections, druggets, ſerges, and coarſe woollen cloths. It is 28 miles NE. of Rochelle. Lon. 0. 33. W. Lat. 46. 20. N.

* NIP. *n. ſ.* [from the verb.] 1. A pinch with nails or teeth.—I am ſharply taunted, yea, ſometimes with pinches, *nips*, and bobs. *Aſcham.* 2. A ſmall cut.—

What, this a ſleeve? 'tis like a demicannon;
What, up and down, carv'd like an apple tart?
Here's ſnip, and *nip*, and cut, and ſlaſh and ſlaſh,
Like to a cenſer in a barber's ſhop. *Shak.*

3. A blaſt.—

So haſty fruits and too ambitious flow'rs,
In ſpite of froſts, ſpring from th' unwilling earth,
But find a *nip* untimely as their birth. *Stepney.*

4. A taunt; a ſarcaſm.

* *To* NIP. *v. a.* [*nijpen*, Dutch.] 1. To pinch off with the nails; to bite with the teeth.—In oranges and lemons, the *nipping* of their rind giveth out their ſmell more. *Bacon's Natural Hiſtory.* 2. To cut off by any ſlight means.—The ſmall ſhoots that extract the ſap of the moſt leading branches, muſt be *nipt* off. *Mortimer.* 3. To blaſt; to deſtroy before full growth.—

The third day comes a froſt, a killing froſt;
And when he thinks, good eaſy man, full ſurely
His greatneſs is a-ripening, *nips* his root;
And then he falls as I do. *Shak.*

Thou would'ſt extend me to ſome good,
Before I were by froſt's extremity *nipt* in the bud. *Herb.*

The firſt-born bloom of ſpring
Nipt with the lagging rear of winter's froſt. *Milt.*

—Had he not been *nipped* in the bud, he might have made a formidable figure in his own works among poſterity. *Addiſon.*—From ſuch encouragement it is eaſy to gueſs to what perfection I might have brought this work, had it not been *nipt* in the bud. *Arbuthnot.* 4. To pinch as froſt.—

It is a *nipping* and an eager air. *Shak. Hamlet.*

When icicles hang by the wall,
And Dick the ſhepherd blows his nail,
When blood is *nipt*, and ways be foul,
Then nightly ſings the ſtaring owl. *Shak.*

5. To vex; to bite.—

And ſharp remorſe his heart did pick and *nip*. *Spenſer.*

6. To ſatiriſe; to ridicule; to taunt ſarcaſtically.

But the right gentle mind would bite his lip
To hear the javel ſo good men to *nip*. *Hub. Tale.*

—Quick wits commonly be in deſire new-fangled; buſy in every matter; ſoothing ſuch as be preſent, *nipping* any that is abſent. *Aſcham.*

NIPA, in botany, a genus of the monandria order, belonging to the monœcia claſs of plants.

NIPASHE, a lake of N. America. Lon. 101. 0. W. Lat. 62. 10. N.

(1.) NIPEGON, a large river of N. America, which runs into Lake SUPERIOR, from the N.

(2.) NIPEGON, a lake near the above river, into which a ſmall river falls, from the top of a mountain, over a rock 600 feet high, in a narrow channel, which makes the cataract appear like a white garter ſuſpended in the air. A tribe of the CHIPPEWA Indians inhabit the banks of this lake.

(1.) NIPHON, or HIPHON, the largeſt of the Japan iſlands, being 660 miles long, 400 broad, and 1500 in circumference, containing 55 provinces. (See JAPAN, N° I, 1.) Its chief cities are JEDDO, *Meaco*, OSACCA, *Gurunga*, and Saccai. Lon. 148° 20′ to 158° 45′ E. Lat. 33° 45′ to 40° N.

(2.) NIPHON, the name given to the whole empire of Japan, by the natives, from the above iſland. See JAPAN, N° I, 1.

NIPHUS, Auguſtin, an Italian philoſopher, born in Calabria, in the 16th century. Pope Leo X. created him Count Palatine. He died about 1550. He wrote commentaries on Ariſtotle, and tracts *De Amore et De Pulchro.*

NIPISSING, a lake of N. America, in Upper Canada, NE. of Lake HURON, with which it is connected by French River. Lon. 80. 30. W. Lat. 46. 12. N.

NIPISSINGS, a nation of N. American Indians, who inhabit the banks of the above lake, and near the head waters of the river Ottawa. They have 300 warriors.

(1.) * NIPPER. *n. ſ.* [from *nip.*] A ſatiriſt. Out of uſe.—Ready backbiters, ſore *nippers*, and ſpiteful reporters privily of good men. *Aſcham.*

(2.) * NIPPERS. *n. ſ.* [from *nip.*] Small pincers.

(3.) NIPPERS, in the manege, are four teeth in the fore part of a horſe's mouth, two in the upper, and two in the lower jaw. A horſe puts them forth between the 2d and 3d year.

* NIPPINGLY. *adv.* [from *nip.*] With bitter ſarcaſm.

NIPPISSING. See NIPISSING.

(1.) * NIPPLE. *n. ſ.* [*nypele*, Saxon.] 1. The teat; the dug; that which the ſucking young take into their mouths.—

The babe that milks me.—
I would, while it was ſmiling in my face,
Have pluckt my *nipple* from his boneleſs gums. *Shakeſp.*

—In creatures that nouriſh their young with milk, are adapted the *nipples* of the breaſt to the mouth and organs of ſuction. *Ray on the Creation.* 2. It is uſed by *Chapman* of a man.—

As his foe went then ſuffic'd away,
Thoas Ætolius threw a dart, that did his pile convey
Above his *nipple*, through his lungs. *Chapman.*

3. The orifice at which any animal liquor is ſeparated.—In moſt other birds there is only one gland,

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gland, in which are divers little cells ending in two or three larger cells, lying under the *nipple* of the oil-bag. *Derham's Phyſico-Theology.*

(2.) NIPPLE. See ANATOMY, *Index.*

(1.) ‡ NIPPLEWORT. *n. ſ.* [Lapſana.] A weed.

(3.) NIPPLE-WORT, in botany. See LAPSANA.

NIRNOVA, a river of European Turkey, which runs into the Pruth in Moldavia.

(1.) NISA, a celebrated territory of ancient Media, near the Caſpian Sea, famous for its horſes.

(2.) NISA. See NYSA.

NISÆA, a town of ancient Parthia.

NISAN, a month of the Hebrew Kalendar, anſwering to our March, and which ſometimes takes from February or April, according to the courſe of the moon. It was the firſt month of the ſacred year, at the coming out of Egypt (Exod. xii. 2.), and the 7th of the civil year. By Moſes it is called ABIB. The name *Niſan* was uſed only ſince the time of Ezra, and the return from the captivity of Babylon. On the 1ſt of this month the Jews faſted for the death of Aaron's ſons. (Lev. x. 1, 2, 3.) On the 10th was a faſt for Miriam the ſiſter of Moſes; and every one provided himſelf with a lamb for the paſſover. On this day the Iſraelites paſſed over Jordan under the conduct of Joſhua, (iv. 19.) On the 14th, in the evening, they ſacrificed the paſchal lamb; and on the 15th was held the ſolemn paſſover. (Exod. xii. 18. &c.) On the 16th they offered the ſheaf of the ears of barley as the firſt-fruits of the harveſt. (Levit. xxiii. 9. &c.) The 21ſt was the octave of the paſſover, which was ſolemnized with particular ceremonies. The 26th was a faſt in memory of the death of Joſhua. On this day they began their prayers to obtain the rains of the ſpring. On the 29th they commemorated the fall of the walls of Jericho.

NISAO, a river which riſes in the centre of Hiſpaniola, falls into the ſea on the S. and gives name to a cape on the W. of its mouth, 21 miles W. of the Nigua.

NISARI, an iſland in the Mediterranean, 6 miles NW. of Rhodes.

(1.) NISBET, Alexander, Eſq; author of an excellent *Syſtem of Heraldry*, in 2 vols folio, flouriſhed about the end of the 17th and beginning of the 18th centuries. His work, which was embelliſhed with plates, is ſtill eſteemed equal, in point of reſearch into antiquity, hiſtorical, biographical and heraldic accuracy, to any thing yet publiſhed on the ſubject. It is aſtoniſhing that no memoir is to be found, reſpecting a gentleman who exerted himſelf ſo much to immortalize the names, families, genealogical connections and heroic achievements of his countrymen. His name is not even mentioned in *Sir John Sinclair's Statiſtical Account*—at leaſt it is not to be found in any of the Indexes to that work.

(2.) NISBET, or NESBIT. See NESBIT.

(3.) NISBET, a pariſh. See CRAILING, N° 1.

NISCHAPOUR. See NIXABOER.

NISCHLITZ, a lake of Silefia.

NISDORF, a town of Bohemia.

(1.) NISHNEI NOVOGOROD, a prov. of Ruſſia.

(2.) NISHNEI NOVOGOROD, a populous town in the above province with a citadel and an archbiſhop's ſee; ſeated on a mountain, near the conflux of the Volga and the Occa; 280 miles E. by N. of Moſcow. Lon. 46. 30. E. Lat. 56. 34. N.

NISI, a river of Sicily, which runs into the ſea, 15 miles S. of Meſſina.

NISIBIN, a fort of Aſiatic Turkey, in Diarbekir, on the Tigris, 78 miles SSE. of Diarbek.

(1.) NISIBIS, in ancient geography, a very ancient, noble, and ſtrong city of Meſopotomia, in Mygdonia towards the Tigris, from which it is diſtant two days journey. Some aſcribe its origin to Nimrod, and ſuppoſe it to be the *Achad* of Moſes. It was built by a colony of Macedonians, who called it *Antiochia of Mygdonia.* (*Plutarch.*) Strabo ſays it was ſituated at the foot of mount Maſius. It was the Roman bulwark againſt the Parthians and Perſians. It ſuſtained three memorable ſieges againſt the power of Sapor, A. D. 338, 346, and 350; but the emperor Jovianus, by an ignominious peace, delivered it up to the Perſians, A. D. 363. Mr Ives, who paſſed through this place in 1758, tells us, that "it looked pretty at a diſtance, being ſeated on a conſiderable eminence, at the foot of which runs a river, formerly called *Mygdonius*, with a ſtone bridge of 11 arches built over it. Juſt by the river, at the foot of the two hills on which the town is built, begin the ruins of a once flouriſhing place, which reach quite up to the preſent town. From every part of this place the moſt delightful proſpects would appear, were the ſoil properly cultivated and planted; but inſtead of thoſe extenſive woods of fruit trees, which Rawolf ſpeaks of as growing near the town, not above 30 or 40 ſtraggling trees of any kind can be perceived; and inſtead of that great extent of arable land which he deſcribes, a very inconſiderable number of acres now remain. The town is deſpicable, the ſtreets extremely narrow, and the houſes, even thoſe of ſtone, are mean. It ſuffered much by the famine of 1757, loſing almoſt all its inhabitants by death or deſertion. The ſtreets preſented many miſerable objects, who greedily devoured rinds of cucumbers, and every other refuſe article of food thrown out into the highway. The price of bread had riſen near 4000 per cent within the preceding 14 years.

(2.) NISIBIS, a town of Aria, near lake Arias. *Ptolemy.*

(3.) NISIBIS, or NISIBITANA } COLONIA, an ancient Roman colony.

NISIDA, an iſland in the Gulf of Naples, with a harbour, called *Port-Pavone*, and a lazaretto, where ſhips perform quarantine; 5 miles SW. of Naples.

* NISI PRIUS. *n. ſ.* [In law.] A judicial writ, which lieth in caſes where the inqueſt is panelled and returned before the juſtices of the bank; the one party or the other making petition to have this writ for the eaſe of the country. It is directed to the ſheriff, commanding that he cauſe the men empanelled to come before the juſtices in the ſame county, for the determining of the cauſe there, except it be ſo difficult that it need great deliberation: in which caſe, it is ſent again to the bank. It is ſo called from the firſt words of the writ *niſi prius apud talem locum venerint*; whereby it appeareth, that juſtices of aſſizes and juſtices of *niſi prius* differ. So that juſtices of *niſi prius* muſt

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muſt be one of them before whom the cauſe is depending in the bench, with ſome other good men of the county aſſociated to him. *Cowel.*

(1.) NISITA, a town of Naples, in Lavora, 7 miles WSW. of Cuma.

(2.) NISITA. See NISIDA.

NISMA, a town of Saxony, in Naumburg.

NISMES, or NIMES, an ancient, large and flouriſhing town of France, in the dep. of Gard and late prov. of Languedoc, with an academy. It has a great number of manufactures of cloth of gold and ſilk, and of ſtuffs formerly known by the name of ſerge of Niſmes. There are ſeveral monuments of antiquity, of which the amphitheatre is the principal, built by the Romans. The *maiſon quarree*, or the ſquare houſe, is a piece of architecture of the Corinthian order, and one of the fineſt in the world. The temple of Diana is in part gone to ruin. Niſmes was taken by the Engliſh in 1417. The inhabitants were all Calviniſts; but Lewis XIV. demoliſhed their church in 1685, and built a caſtle to keep them in awe. It is ſeated in a delightful plain, abounding in wine, oil, game, and cattle. It contains a great number of venerable relics of Roman antiquity and grandeur. It owed much to Bp. Beccdelievre; "A prelate (ſays Mr Townſend) equally diſtinguiſhed for benevolence and piety; who, by his wiſdom and beneficence, in 45 years more than doubled the number of its inhabitants; for, having found only 20,000, he had the happineſs before his death of ſeeing 50,000 riſe up to call him bleſſed." Lon. 4. 26. E. Lat. 43. 50. N.

NISQUEUNIA, a town of New York, above Albany, the chief ſeat of the ſect called SHAKERS.

NISROCH, a god of the Aſſyrians. Sennacherib was killed by two of his ſons, while paying his adoration to this god. (2 Kings xix. 37.) The ſeptuagint calls him *Meſrach*; Joſephus calls him *Araſhes*. The Hebrew of Tobit publiſhed by Munſter calls him DAGON. Some think the word ſignifies a dove; others underſtand by it an eagle, which has given occaſion to an opinion, that Jupiter Belus, from whom the Aſſyrian kings pretended to be derived, was worſhipped by them under the form of an eagle, and called *Niſroch*.

(1.) NISSA, a river of European Turkey, in Servia, which joins the Ibar.

(2.) NISSA, a city of Servia, on the above river. (See NAISSUS.) It has two forts with walls and ramparts, ſeveral moſques, baths and fountains. It was taken in 1737 by the Hungarians, but retaken in 1738. It is 150 miles NE. of Raguſa.

(3, 4.) NISSA. See NYSA and NYSSA.

(5.) NISSA. See NIZZA.

NISSAR, or GOLDEN EAGLE, in ornithology. See ABYSSINIA, ETHIOPIA, § 64; and FALCO, N° 4.

NISSER, a lake of Norway, in Chriſtianſand, 35 miles W. of Skeen.

NISSOLIA, in botany, a genus of the decandria order, belonging to the diadelphia claſs of plants; and in the natural method ranking under the 32d order, *Papilionaceæ*. The calyx is quinquedentate; the capſule monoſpermous, and terminated by a ligulated wing.

NISTER a river of Germany, in Weſtphalia, which runs into the Sieg, near Schonitz.

(1.) NISUS, the ſon of Hyrtacus, a young Trojan who accompanied Æneas to Italy. He was united in the cloſeſt friendſhip with EURYALUS. They ſignalized themſelves in the war with the Rutulians; went into their camp in the night, and committed great ſlaughter; but, returning victorious, were perceived and killed by the Rutulians. Their friendſhip became proverbial.

(2.) NISUS, in fabulous hiſtory, a king of Megara, ſon of Mars, or of Pandion, whoſe life and ſucceſs depended on a yellow lock of his hair not being cut. Minos king of Crete beſieged Megara. SCYLLA the daughter of Niſus, being in love with Minos, cut off the fatal lock, while her father was aſleep. Megara was taken: Minos deſpiſed the parricide, who threw herſelf, in deſpair, into the ſea, and was changed into a lark, while Niſus was metamorphoſed into a hawk. Hence the poets traced the antipathy of theſe birds.

NISYROS, an iſland in the Ægean Sea, W. of Rhodes, and originally joined to Coos. *Pliny.*

* NIT. *n. ſ.* [*naitu*, Sax.] The eggs of a louſe, or ſmall animal.—The whame, or burel-fly, is vexatious to horſes in ſummer, not by ſtinging them, but only by their bombylious noiſe, or tickling them in ſticking their *nits*, or eggs, on the hair. *Denham.*

NITCHOU, a mountain of Thibet, with a river that riſes in it, and runs into the Burhampooter at Ghergong.

NITCUDY, a river of Indoſtan, which runs into the Manzorat, 35 miles E. of Oudighir.

* NITENCY *n. ſ.* [*nitentia*, Lat.] 1. Luſtre; clear brightneſs. 2. [From the Latin. *nitor*] Endeavour; ſpring to expand itſelf.—The atoms of fire accelerate the motion of theſe particles; from which acceleration their ſpring, or endeavour outward, will be augmented; that is, thoſe zones will have a ſtrong *nitency* to fly wider open. *Boyle.*

NITH or NID, a river of Scotland, which riſes from *Loch-Cure*, in the SW. end of the pariſh of New Cumnock in Ayrſhire, and running SE. in a meandering courſe, paſſes by Sanquhar, Morton, and Drumlanrig, and receives the waters of the *Scarr*, the *Carron*, the *Cample*, and other rivers, and falls into the Solway Frith, 9 miles below Dumfries. It abounds with excellent trouts and with ſalmon near its mouth. Its length in a direct line is 50 miles, but, meaſuring its windings, exceeds 100.

* NITHING *n. ſ.* [or *niding*; ſee NIDING.] A coward, daſtard, poltroon.

NITHISDALE, } or NIDDISDALE, a large
NITHSDALE, } mountainous diviſion of Dumfrieſhire, lying W. of Annandale, ſo named from the NITH. This country was formerly ſhaded with noble foreſts, which are now almoſt deſtroyed. At preſent, nothing can be more naked, wild, and ſavage: Yet it yields lead, ſilver and gold: the mountains are covered with ſheep and black cattle; and here are ſtill ſome conſiderable remains of the ancient woods, particularly that of Holywood, 3 miles from Dumfries, noted for a handſome church, built out of the ruins

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ruins of an ancient abbey; and alſo for being the birth-place of the famous aſtrologer, hence called *Joannes de Sacro Boſco.* (See HOLYWOOD, and SACRO BOSCO.) Mr Pennant calls it a beautiful vale, improved in appearance by the bold curvature of the meandering ſtream, and for ſome ſpace adorned with groves and gentlemens ſeats.

* NITID. *adj.* [*nitidus*, Latin.] Bright; ſhining; luſtrous.—We reſtore old pieces of dirty gold to a clean and *nitid* yellow, by putting them into fire and aqua fortis, which take off the adventitious filth. *Boyle.*

NITTOBRIGES, an ancient people of Gallia Aquitanica, mentioned by Cæſar, (*De Bello Gall.* lib. vii. c. 7.) ſuppoſed to have inhabited the country ſince called AGENOIS, in Guienne; now the department of Lot and Garonne.

NITOCRIS, the wife of Evil-Merodach, and mother of Belſhazzar, K. of Babylon, was a woman of extraordinary abilities. After the death of Evil-Merodach, ſhe took the burden of all public affairs upon herſelf; and, while her ſon followed his pleaſures, did all that could be done by human prudence to ſuſtain the tottering empire. She perfected the works which Nebuchadnezzar had begun for the defence of Babylon; raiſed ſtrong fortifications on the ſide of the river, and cauſed a vault to be made under it, leading from the old palace to the new, 12 feet high and 15 wide. She likewiſe built a bridge acroſs the Euphrates, and accompliſhed ſeveral other works, which were afterwards aſcribed to Nebuchadnezzar. Philoſtratus, in deſcribing this bridge, tells us, that it was built by a queen, who was a native of Media; whence we may conclude Nitocris to have been by birth a Mede. See BABYLONIA, § 1. A ridiculous anecdote is related of her, which, if true, does no honour to her memory, as it was at beſt *a trick* upon the *unfortunate*; and, if falſe, does as little honour to the inventor.

NITRARIA, in botany, a genus of the monogynia order, belonging to the dodecandria claſs of plants; and in the natural method ranking with thoſe of which the order is doubtful. The corolla is pentapetalous, with the petals arched at the top; the calyx quinquefid; the ſtamina 15; the fruit a monoſpermous plum.

NITRATES. See CHEMISTRY, *Index.*

(1.) * NITRE. *s. f.* [*nitre*, Fr. *nitrum*, Latin.] —The ſalt which we know at this time, under the name of *nitre* or ſalt petre, is a cryſtalline pellucid, but ſomewhat whitiſh ſubſtance, of an acrid and bitteriſh taſte, impreſſing a peculiar ſenſe of coldneſs upon the tongue. This ſalt, though it affords, by means of fire, an acid ſpirit, capable of diſſolving almoſt every thing, yet manifeſts no ſign of its containing any acid at all in its crude ſtate. *Nitre* is of the number of thoſe ſalts which are naturally blended in imperceptible particles in earths, ſtones, and other foſſil ſubſtances, as the particles of metals are in their ores: it is ſometimes however found pure, in form of an efflorescence, either on its ores or on the ſurface of old walls; theſe efflorescences diſſolved in proper water, ſhooting into regular and proper cryſtals of *nitre*. The earth from which *nitre* is made, both in Perſia and the Eaſt-Indies, is a kind of yelloviſh marl found in the bare cliffs of the ſides of hills expoſed to the northern and eaſtern winds, and never in any other ſituation. The natrum or *nitre* of the ancients, is a genuine, native, and pure ſalt, extremely different from our *nitre*, and from all other native ſalts; being a fixed alkali, plainly of the nature of thoſe made by fire from vegetables, yet being capable of a regular cryſtallization, which thoſe ſalts are not. It is found on or very near the ſurface of the earth, in thin flat cakes, ſpungy, light, and friable; and when pure, of a pale browniſh white colour. In ſcripture we find that the ſalt called *nitre* would ferment with vinegar, and had an abſterſive quality, properties which perfectly agree with this ſalt, but not with ſalt petre, as do many different qualities aſcribed to it by the ancients. *Hill.*—

Some tumultuous cloud,
Inſtinct with fire and *nitre*, hurried him. *Milt.*
Some ſteep their feed, and ſome in cauldrons boil,
With vigorous *nitre* and with lees of oil. *Dryd.*

(2.) NITRE. See CHEMISTRY, *Index.*

(3.) NITRE, CALCAREOUS. See CHEMISTRY, *Index.*

(4.) NITRE, CUBIC. See CHEMISTRY.

(1.) NITRIA, a famous deſert of Egypt, 37 miles long, bounded on the N. by the Mediterranean, E. by the Nile, S. by the deſert of Seta, and W. by St Hilarion. It had formerly a great number of monaſteries; now reduced to 4. Its name is derived from a ſalt lake, from which is obtained the NATRON of the ancients. See CHEMISTRY, *Index*; and NATRUM.

(2, 3.) NITRIA, 2 towns of Egypt, above Memphis.

(1.) NITRIC, *adj.* of or belonging to NITRE.
(2.) NITRIC ACID.
(3.) NITRIC ÆTHER.
(4.) NITRIC ALCOHOL.
(5.) NITRIC SALTS.
} See CHEMISTRY, *Index.*

NITRITES. See CHEMISTRY.

NITROGENE, or NITROGENOUS GAS. See CHEMISTRY, *Index.*

NITRO-MURIATIC ACID. See CHEMISTRY, *Index.*

(1.) * NITROUS, *adj.* [*nitreux*, Fr. from *nitre.*] Impregnated with nitre; conſiſting of nitre.—Earth and water, mingled by the heat of the ſun, gather *nitrous* fatneſs more than either of them have ſeverally.—The northern air being more fully charged with thoſe particles ſuppoſed *nitrous*, which are the aliment of fire, is fitteſt to maintain the vital heat in that activity which is ſufficient to move ſuch an unwieldy bulk with due celerity. *Ray.*

He to quench his drought ſo much inclin'd,
May ſnowy fields and *nitrous* paſtures find.
Blackmore.

(2.) NITROUS ACID. See CHEMISTRY, *Index.* In 1793, Mr William Scott of Bombay propoſed to cure the Lues Venerea, by ſubſtituting the nitrous acid inſtead of mercury. The principles on which he introduced this remedy, and the unqualified terms in which he recommended its uſe, inclined various medical practitioners in Europe and America to make an experimental inquiry into its merits. Among thoſe eminent profeſſional gentlemen who have taken extraor-

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dinary pains to examine this ſubject, are Dr Rollo of Woolwich, Dr Beddoes of Clifton, Mr Blair of London, and Mr Charles Brown of Ely Place, Holborn; from whoſe communication to the editor of the Monthly Magazine for January 1799, we extract this account of this important controverſy, which at preſent divides the opinions of the medical practitioners. "Although (ſays he) a cloud of witneſſes have teſtified the good effects of the oxygenated medicines in ſome ſtates of the lues venerea, it is ſtill diſputed by men of unimpeached character, ſkill, and probity, whether they may be juſtifiably depended on *alone*, eſpecially in the more advanced ſtages of this inſidious complaint. Mr Blair, with much ability and candour, has brought into a clear point of view all the exiſting facts both for and againſt the new mode of treatment. (See the firſt of his Eſſays on the Venereal Diſeaſe.) Upon the whole he ſtates, that the generality of the cures adduced in favour of the acids, &c. are not ſuch as an impartial obſerver would ſelect as the *moſt unequivocal*: It is therefore to be doubted, he thinks, whether the cures ought to be admitted as finally concluſive. Again, a great number of perſons, treated by Dr Girdleſtone of Yarmouth, Mr Benjamin Bell of Edinburgh, and other eminent practitioners, (beſides his own patients at the Lock Hoſpital and Finſbury Diſpenſary) experienced *an actual increaſe* of the venereal ſymptoms, during the careful exhibition of theſe remedies; whence he infers, that the ſucceſsful trials alleged by Dr Rollo and Dr Beddoes are probably fallacious. Dr Rollo has given the reſult of more than 150 caſes and experiments, conducted by the ſurgeons of the Royal Artillery Hoſpital; and is decidedly of opinion, *that the new remedies are more ſafe and certain than mercury*, in every ſtage of this diſeaſe. Dr Beddoes, with his uſual induſtry, has likewiſe collected a large body of evidence from different parts of the kingdom, which he conceives will go a great way toward eſtabliſhing the efficacy of theſe remedies, particularly the nitrous acid, both in primary and ſecondary ſymptoms of ſyphilis;" to which Mr Brown has contributed his mite. The ſubject is certainly highly worthy of farther inveſtigation; and Dr Beddoes and Mr Blair are ſtill perſevering in collecting additional evidence.

(3.) NITROUS AIR. See AEROLOGY and EUDIOMETER.

(4.) NITROUS GAS. See CHEMISTRY, *Index*.

* NITRY. *adj.* [from *nitre*.] Nitrous.—

Winter my theme confines; whoſe *nitry* wind
Shall cruſt the flabby mire. *Gay*.

NITTA, a ſpecies of MIMOSA, which grows on the banks of the Senegal in Africa, mentioned by Mr Park in his travels. Its fruit is valuable; the pods are long and narrow, containing a few black ſeeds enveloped in a fine mealy powder, of a bright yellow colour, reſembling the flour of ſulphur, and having a ſweet mucilaginous taſte. When eaten by itſelf it is clammy, but conſtitutes a pleaſant and nouriſhing food mixed with milk or water.

NITTENAU, a town of Bavaria, on the Regin, 15 miles NE. of Ratiſbon.

* NITTILY. *adv.* [from *nitty*.] Louſily.—One Bell was put to death at Tyburn for moving a new rebellion; he was a man *nittily* needy, and therefore adventurous. *Hayward*.

* NITTY. *adj.* [from *nit*.] Abounding with the eggs of lice.

* NIVAL *adj.* [*niveus*, Lat.] Abounding with ſnow. *Dict*.

NIVARIA, in ancient geography, an iſland near the W. coaſt of Africa: ſuppoſed to be TENERIFF.

NIVE, a river of France, which riſes in the Pyrenees, and runs into the ſea at Bayonne.

(1.) NIVELLE, a town of France, in the dep. of the Dyle, and ci-devant province of Auſtrian Brabant, remarkable for its abbey of Canoneſſes, and for its admiſſion of young ladies of the firſt quality, who, even before the revolution, were not confined as in nunneries, but might go out and marry whenever they ſaw proper. Lon. 4. 20. E. Lat. 50. 40. N.

(2.) NIVELLE DE LA CHAUSSEE, Peter Claude, a comic poet, born at Paris, who acquired great reputation by inventing a new kind of entertainment, which was called *the Weeping Comedy* and by ſome late dramatiſts a Melo-drame. Inſtead of imitating Ariſtophanes, Terence, Moliere, and the other celebrated comic poets who had preceded him; and inſtead of exciting laughter by painting ridiculous characters, giving ſtrokes of humour and abſurdities in conduct; he applied himſelf to repreſent the weakneſſes of the heart, and to touch and ſoften it. In this manner he wrote five comedies: 1. *La fauſſe Antipathie*. 2. *Le Préjugé à la Mode*; this piece met with great ſucceſs. 3. *Melanide*. 4. *Amour pour Amour*; and, 5. *L'Ecole des Meres*. He was received into the French academy in 1736; and died at Paris in 1754, aged 63. He alſo wrote a tragedy, entitled, *Maximianus*; and an Epiſtle to Clio, an ingenious didactic poem.

* NIVEOUS. [*adj. niveus*, Lat.] Snowy; reſembling ſnow.—Cinabar becomes red by the acid exhalation of ſulphur, which otherwiſe preſents a pure and *niveous* white. *Brown*.

NIVERNOIS, a ci-devant inland province and duchy of France, lying on the W. ſide of Burgundy, and between it, Bourbonnois and Berri. It is pretty fertile in wine, fruit, and corn; except the part called *Morvant*, which is mountainous and barren. There is a great deal of wood, and ſeveral mines of iron and of pit-coal. It is watered by a great number of rivers; of which the Allier, the Loire, and the Yonne, are navigable. Nevers was the capital city, as it ſtill is of the department; about which the lateſt geopraphers differ; for Cruttwell ſays "Nivernois now is chiefly in the department of the YONNE," whereas Brookes and Walker ſay, "It now forms the dep. of NIEVRE," which ſeems moſt probable.

NIVERNUM. See NOVIODUNUM, N° 1.

NIUKCHEUSKOI, a town of Ruſſia, in the prov. of Uſtiug, on the Sula.

NIVORZ, a town of Beſſarabia. See NOVIODUNUM, N° 4.

NIVOSE, [Fr. *i. e.* the ſnowy month.] the 4th month in the new and ephemeral French calendar. See CALENDAR, § 3. It began Dec. 21, and ended Jan. 19.

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NIWEGAL, a ſmall village and beach of S. Wales, on the coaſt of Pembrokeſhire, remarkable for the diſcovery of an immenſe quantity of the ſtumps of trees appearing below low-water mark, after and during a ſtorm in 1590, notwithſtanding the country all round it is entirely barren of wood.

NIXABOER, NISCHAPOUR, or IRAN, a town of Perſia, in Choraſan, near a turquoiſe mine; famous for its manufacture of ſword blades. Manna is collected near it. It is 132 miles NW. of Herat, and 345 NE. of Iſpahan.

NIXAPA, a rich and conſiderable town of New Spain, with a rich convent of Dominicans. The country about it abounds in cochineal, indigo, and ſugar. Lon. 97. 25. E. Lat. 15. 20. N.

NIXONTON, a town of N. Carolina, capital of Paſquotank county, ſeated on Little River; 468 miles SW. of Philadelphia. Lon. 1. 32. W. of that city. Lat. 36. 11. N.

NIZAM, *n. ſ.* a governor of a province in the E. Indies.

NIZAMPATAM, a town of Indoſtan, in the circar of Guntoor, at the mouth of Kiſtnah, on the coaſt of the Bay of Bengal; 34 miles SW. of Maſulipatam. Lon. 80. 48. E. Lat. 13. 35. N.

NIZAO, a cape and river of Hiſpaniola.

NIZEGORODSKOE, a province of Ruſſia, bounded on the N. by Koſtromſkoi, E. by Kazan and Simbirſk, S. by Penzenſkoe, and W. by Uladimir and Tambou. It is 160 m. long, and 100 broad. Lon. 60° to 64° E. of Ferro. Lat. 54° 10′ to 57° N.

NIZNEI NOVOGOROD, the capital of the above province. Perhaps it is the ſame with NISHNEI NOVOGOROD. The Rev. Clement Cruttwell has occaſioned a kind of *chaos* in modern geography, by the almoſt innumerable variations of ſpelling he has introduced into his *Univerſal Gazetteer*. Such innovations ſhould never be made, unleſs accompanied with proper references to the uſual mode of ſpelling.

NIZNOTOSMANSKOI, a town of Ruſſia, in Archangel, on the Dwina; 48 m. E. of Schenſkurſk.

NIZOLIUS, Marius, an Italian grammarian, who, by his erudition, contributed much to the promotion of literature in the 16th century. In 1553, he publiſhed Lib. iv. *De veris principiis et vera ratione philoſophandi contra Pſeudo-philoſophos*; wherein he attacks the ſchoolmen and followers of Ariſtotle for their abſurd opinions and barbariſms, with great ſhrewdneſs and vivacity. Leibnitz was ſo pleaſed with it, that he republiſhed it, with critical notes of his own, in 4to, 1607. Nizolius alſo publiſhed *Theſaurus Ciceronianus, ſive Apparatus Linguæ Latinæ e Scriptis Tullii Ciceronis collectus*; fol.: a good Latin dictionary of Cicero's words and expreſſions, of which he was a great admirer.

* NIZY. *n. ſ.* [from *niais.*] A dunce; a ſimpleton. A low word.—

True critics laugh, and bid the trifling *nizy*
Go read Quintilian. *Anon.*

(1.) NIZZA, or NISSA, a town of Portugal, in Alentejo; 21 miles E. of Abrantes.

(2.) NIZZA DE LA PAGLIA, a town of France, in the department of Marengo, and late duchy of Montferrat; ſeated on the Belbo; 7 miles NW. of Acqui, 14 SE. of Aſti, and 15 SW. of Alexandria. Lon. 8. 36. E. Lat. 45. 15. N.

(1.) * NO. *adv.* [*na*, Saxon.] 1. The word of refuſal: contrary to *yea* or *yes*.—

Our courteous Antony,
Whom ne'er the word of *no* woman heard ſpeak. *Shak.*

Henceforth my wooing mind ſhall be expreſt
In ruſſet yeas and honeſt kerſey *noes*. *Shak.*

—If you will not conſider theſe things now, the time will ſhortly come when you ſhall conſider them whether you will or *no*. *Calamy's Sermons*

2. The word of denial, oppoſite to conceſſion or affirmation.—I think it would not ſort amiſs to handle the queſtion, whether a war for the propagation of the Chriſtian faith, without another cauſe of hoſtility, be lawful or *no*, and in what caſes? *Bacon.* 3. It ſometimes confirms a foregoing negative.—

My name's Macbeth:—
—The devil himſelf could not pronounce a title
More hateful to mine ear;—
—*No*, nor more fearful. *Shak.*

Never more
This hand ſhall combat on the crooked ſhore:
No; let the Grecian pow'rs, oppreſt in fight,
Unpity'd periſh in their tyrant's ſight. *Hom.*

4. It ſometimes ſtrengthens a following negative: *no not*, not even.—

No not the bow which ſo adorns the ſkies,
So glorious is, or boaſts ſo many dyes. *Waller.*

(2.) * No. *adj.* 1. Not any; none.—Let there be *no* ſtrife between me and thee. *Gen.* xiii. 8.—

Some dire misfortune to portend,
No enemy can match a friend. *Swift.*
No meaning puzzles more than wit. *Pope.*
No wit to flatter left of all his ſtore;
No fool to laugh at, which he valued more. *Pope.*
No weeping orphan ſaw his father's ſtores
Our ſhrines irradiate. *Pope.*

Our bard
No common object to your ſight diſplays. *Pope.*
Poor Edwin was *no* vulgar boy. *Beattie.*

2. It ſeems an adjective in theſe phraſes, *no* longer, *no* more, *no* where,† though ſometimes it may be ſo commodiouſly changed to *not*, that it ſeems an adverb: as, the days are yet *not* ſhorter.—When we ſaw that they were *no* where, we came to Samuel. 1 *Sam.* x. 14.—

In vain I reach my feeble hands to join
In ſweet embraces, ah! *no* longer thine. *Dryd.*

3. *No one*; none; not any one.—*No one* who doeth good to thoſe only from whom he expects to receive good, can ever be fully ſatisfied of his own ſincerity. *Smalridge.*

(3.) No, in ancient geography, or NO-AMMON, a conſiderable city of Egypt mentioned by Jeremiah, Ezekiel, and Nahum, thought to be named from an idol analogous to Jupiter Ammon. The Septuagint tranſlate the name in Ezekiel, *Dioſpolis, the city of Jupiter*. Bochart takes it to be *Thebes* of Egypt; which, according to Strabo and Ptolemy, was called *Dioſpolis*. Jerome, after the Chaldee paraphraſt Jonathan, ſuppoſes it to be Alexandria, named by way of anticipation; or an

† No *cannot be an* adjective *in* nowhere, *which is an* adverb, *and ſo perfect a* compound word, *that it is written and printed by Dr* JOHNSON *himſelf without even a* HYPHEN. See NOWHERE.

ancient city of that name is supposed to have stood on the spot where Alexandria was built.

NOACHIC, *adj.* Of or belonging to NOAH.

NOACHIDÆ, a name given by the Rabbins to all mankind who are not of the chosen race of Abraham. The Rabbins pretend, that God gave Noah and his sons certain general precepts, which contain the natural rights common to all men, and the observation of which alone will be sufficient to save them. After the law of Moses, the Hebrews would not suffer any stranger to dwell in their country, unless he would conform to the precepts of the Noachidæ. In war they put to death, without quarter, all that were ignorant of them. These precepts are 7: The 1st enjoins obedience to judges, magistrates, and princes. The 2d prohibits idolatry, superstition, and sacrilege. The 3d forbids cursing, blasphemy, and perjury. The 4th prohibits all incestuous and unlawful conjunctions, as sodomy, bestiality, and crimes against nature. The 5th forbids the effusion of blood of all sorts of animals, murder, wounds, and mutilations. The 6th prohibits theft, cheating, lying, &c. The 7th forbids to eat the parts of an animal still alive, as was practised by some pagans. To those the Rabbins have added some others; but as no mention is made of these precepts in scripture, or in the writings of Josephus or Philo; and as none of the ancient fathers knew any thing of them, they appear to be spurious.

NOAH, or NOE, the son of Lamech, and the 10th from Adam, was born A. M. 1056. Amidst the general corruption into which all mankind were fallen at this time, Noah alone, with his family, were found worthy of being preserved from total destruction by the deluge: A. M. 1656. See ARK, and DELUGE; also Gen. vi.—viii. He cursed Canaan, probably because he was a partner in his father Ham's crime of disrespect, but chiefly by a spirit of prophecy, because the Canaanites his descendants were after this to be rooted out by the Israelites. Noah added, Let the Lord, the God of Shem, be blessed, and let Canaan be the servant of Shem. And he was so in effect; in the Canaanites subdued by the Hebrews. Lastly, Noah said, Let God extend the possession of Japheth; let Japheth dwell in the tents of Shem, and let Canaan be his servant. This prophecy had its accomplishment, when the Grecians, and afterwards the Romans, descendants of Japheth, made a conquest of Asia, which was the portion of Shem. Noah lived after the deluge 350 years; and the whole time of his life having been 950 years, he died A. M. 2006. According to the common opinion, he divided the whole world among his three sons, in order to repeople it. To SHEM he gave Asia, to HAM Africa, and to JAPHETH Europe. Some say, that he had several others. The spurious Berosus gives him 30, called *Titans*, from their mother Titæa. They pretend that the Teutons or Germans are derived from a son of Noah called Tuiscon. Methodius also mentions Jonithus or Ionicus, a pretended son of Noah. St Peter calls Noah a preacher of righteousness (2 Ep. ii. 5.), because before the deluge he was incessantly preaching and declaring to men, not only by his discourses, but by his unblameable life, and by the building of the ark; in which he was employed 120 years, that the wrath of God was ready to pour upon them. But his preaching had no effect, (Matt. xxiv. 37.) Several learned men have observed, that the heathens confounded Saturn, Deucalion, Ogyges, Cœlus or Ouranus, Janus, Proteus, Prometheus, &c. with Noah. The wife of Noah is called Noriah by the Gnostics; and the fable of DEUCALION and his wife PYRRHA is manifestly invented from the history of Noah. And the learned Mr Bryant has, with uncommon ingenuity and erudition, in his *System of Mythology*, found strong traces of the history of Noah and the general deluge in the fabulous history of the most ancient nations. See DELUGE, § 5, 6.

(1.) NOAILLES, a town of France, in the department of Oise, 7 miles SE. of Beauvais.

(2.) NOAILLES, a town of France, in the dep. of Vienne, 6 miles SSE. of Poitiers.

(1.) NOALE, a province in Treviso, where vines, corn, and fruits, grow in the greatest profusion.

(2.) NOALE, a well-built town, capital of the above province, with a castle on the Marzenego; containing 1200 inhabitants, a market place, several churches and palaces, &c.

NO-AMMON. See No, N° 3.

NOANAGUR, a town of Indostan, and capital of a district in Guzerat; 108 miles SSW. of Janagur, and 178 WSW. of Amedabad. Lon. 69. 30. E. Lat. 20. 22. N.

NOAN-PIN, a town of China, of the 2d rank, in the prov. of Quang-si; 1177 m. SSW. of Peking.

NOAS, a river of Thrace, running into the Ister.

NOB, a sacerdotal city of the tribe of Benjamin or Ephraim. St Jerom says, that in his time it was entirely destroyed, and that the ruins of it might be seen near Diospolis. The destruction of this city, and the barbarous massacre of its inhabitants, by Saul's order, are recorded in 1 Sam. xxi. xxii. See also AHIMELECH, and DOEG.

NOBAH, a city beyond Jordan, so named from an Israelite who made a conquest of it. (Numb. xxxii. 42.) Gideon pursued the Midianites as far as this city. (Judg. viii. 2.) Eusebius says, that there is a desolate place of this name about 8 miles from Heshbon, towards the S. But this could not be the Nobah now mentioned, because it was much farther to the N.

NOBATÆ. See ETHIOPIA, § 3.

NOBILI, Robert DE, an Italian Jesuit, and one of the Indian missionaries, who, in the beginning of the 17th century, to secure success to his mission, assumed the title and appearance of a Bramin, and at length persuaded the credulous people that he was in reality a member of that order. He forged a deed in the ancient Indian characters, shewing that the Bramins of Rome were older than those of India, and that the Jesuits of Rome descended in a direct line from the god Brama. He farther declared on oath, that he derived his origin from this Indian deity. By this imposture he proselyted 12 eminent Bramins, whose influence proved very favourable to his mission. After his death, the Portuguese Jesuits carried on the imposture with very considerable success. These missions, however, were suspended and abandoned, in consequence of a papal mandate

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date iſſued in 1744 by Benedict XIV. who declared his diſapprobation of the artifices that had been uſed in the converſion of the Indians.

NOBILIARY. *n. ſ.* in literary hiſtory, a book containing the hiſtory of the noble families of a nation or province: ſuch are Chorier's Nobiliary of Dauphine, and Caumartin's Nobiliary of Provence. The Germans are ſaid to be particularly careful of their Nobiliaries, in order to keep up the dignity of their families.

* *To* NOBILITATE. *v. a.* [*nobilito* Lat.] To ennoble; to make noble.

(1.) * NOBILITY. *n. ſ.* [*nobilitas*, Lat.] 1. Antiquity of family joined with ſplendour.—When I took up Boccace unawares, I fell on the ſame argument of preferring virtue to *nobility* of blood, and titles, in the ſtory of Sigiſmunda. *Dryden.*—

Long galleries of anceſtors
Challenge nor wonder, nor eſteem from me;
"Virtue alone is true *nobility*." *Dryden.*

2. Rank or dignity of ſeveral degrees, conferred by ſovereigns. *Nobility* in England is extended to five ranks; duke, marquis, earl, viſcount, baron. 3. The perſons of high rank; the perſons who are exalted above the commons.—

It is a purpos'd thing,
To curb the will of the *nobility*. *Shak. Coriol.*

4. Dignity; grandeur; greatneſs.—Though ſhe hated Amphialus, yet the *nobility* of her courage prevailed over it; and ſhe deſired he might be pardoned that youthful error; conſidering the reputation he had to be the beſt knight in the world. *Sidney.*—

But ah, my Muſe, I would thou hadſt facility
To work my goddeſs ſo by thy invention,
On me to caſt thoſe eyes where ſhine *nobility*.
Sidney.

—Baſe men, being in love, have then a *nobility* in their natures more than is native to them. *Shak.*

They thought it great their ſov'reign to controul,
And nam'd their pride *nobility* of ſoul. *Dryden.*

(2.) NOBILITY, in the common acceptation of the word, means that quality or dignity which raiſes a man above the rank of a peaſant or a commoner. It is an opinion not uncommon, and at leaſt plauſible, that the nobility of a well regulated ſtate is the beſt ſecurity againſt monarchial deſpotiſm or lawleſs uſurpation on the one hand, and the confuſion of democratic inſolence on the other. Self-intereſt is the moſt powerful principle in the human breaſt; and it is obviouſly the intereſt of ſuch men to preſerve that balance of power in ſociety upon which the very exiſtence of their order depends.

(4.) NOBILITY, ORIGIN AND PRIVILEGES OF THE BRITISH. The origin of nobility in Europe is by ſome referred to the Goths; who, after they had ſeized a part of Europe, rewarded their captains with titles of honour, to diſtinguiſh them from the common people. We ſhall only in this place conſider the manner in which in our own country they may be created, and the incidents attending them; referring for a fuller account of their origin in Europe to the articles REVOLUTION, and SOCIETY, CIVIL. 1. The right of peerage ſeems to have been originally territorial; that is, annexed to lands, honours, caſtles, manors, and the like; the proprietors and poſſeſſors of which were (in right of thoſe eſtates) allowed to be peers of the realm, and were ſummoned to parliament to do ſuit and ſervice to their ſovereign; and when the land was alienated, the dignity paſſed with it as appendant. Thus in England the biſhops ſtill ſit in the houſe of lords in right of ſucceſſion to certain ancient baronies annexed, or ſuppoſed to be annexed, to their epiſcopal lands; and thus in 11 Henry VI. the poſſeſſion of the caſtle of Arundel was adjudged to confer an earldom on its poſſeſſor. But afterwards, when ALIENATIONS grew to be frequent, the dignity of peerage was confined to the lineage of the party ennobled, and inſtead of territorial, became perſonal. Actual proof of a tenure by barony became no longer neceſſary to conſtitute a lord of parliament; but the record of the writ of ſummons to him or his anceſtors was admitted as a ſufficient evidence of the tenure. Peers of Great Britain (ſays Blackſtone) are now created either by writ or by patent: for thoſe who claim by preſcription muſt ſuppoſe either a writ or patent made to their anceſtors; though by length of time it is loſt. The creation by writ, or the king's letter, is a ſummons to attend the houſe of peers, by the ſtyle and title of that barony which the king is pleaſed to confer: that by patent is a royal grant to a ſubject of any dignity and degree of peerage. The creation by writ is the more ancient way; but a man is not ennobled thereby, unleſs he actually take his ſeat in the houſe of lords; and ſome are of opinion that there muſt be at leaſt two writs of ſummons, and ſitting in two diſtinct parliaments, to evidence an hereditary barony; and therefore the moſt uſual, becauſe the ſureſt way, is to grant the dignity by patent, which endures to a man and his heirs according to the limitation thereof, though he never himſelf makes uſe of it. Yet it is frequent to call up the eldeſt ſon of a peer to the houſe of lords by writ of ſummons, in the name of his father's barony: becauſe in that caſe there is no danger of his childrens loſing the nobility in caſe he never take his ſeat; for they will ſucceed to their grandfather. Creation by writ has alſo one advantage over that by patent; for a perſon created by writ holds the dignity to him and his heirs, without any words to that purpoſe in the writ; but in letters patent there muſt be words to direct the inheritance, elſe the dignity endures only to the grantee for life. For a man or woman may be created noble for their own lives, and the dignity not deſcend to their heirs at all, or deſcend only to ſome particular heirs: as where a peerage is limited to a man and the heirs male of his body by Elizabeth his preſent lady, and not to ſuch heirs by any former or future wife. 2. Let us next take a view of a few of the principal incidents attending the nobility,—excluſive of their capacity as members of parliament, and as hereditary counſellors of the crown, for both which we refer to the articles LORDS and PARLIAMENT. And firſt we muſt obſerve, that in criminal caſes a nobleman ſhall be tried by his peers. The great are always obnoxious to popular envy: were they to be judged by the people, they might be in danger from the prejudice of their judges; and

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and would moreover be deprived of the privilege of the meaneſt ſubjects, that of being tried by their equals, which is ſecured to all the realm by magna charta, c. 29. It is ſaid, that this does not extend to biſhops; who, though they are lords of parliament, and ſit there by virtue of their baronies which hold *jure eccleſiæ*, yet are not ennobled by blood, and conſequently not peers with the nobility. As to peereſſes, no proviſion was made for their trial when accuſed of treaſon or felony, till after Eleanor ducheſs of Glouceſter, wife to the lord protector, had been accuſed of treaſon, and found guilty of witchcraft, in an eccleſiaſtical ſynod, through the intrigues of Cardinal Beaufort. This very extraordinary trial gave occaſion to a ſpecial ſtatute, 20 Hen. VI. cap. 9. which enacts, that peereſſes, either in their own right or by marriage, ſhall be tried before the ſame judicature as peers of the realm. If a woman, noble in her own right, marries a commoner, ſhe ſtill remains noble, and ſhall be tried by her peers: but if ſhe be only noble by marriage, then by a ſecond marriage with a commoner ſhe loſes her dignity; for as by marriage it is gained, by marriage it is alſo loſt. Yet if a ducheſs-dowager marries a baron, ſhe continues a ducheſs ſtill; for all the nobility are *pares*, and therefore it is no degradation. A peer or peereſs (either in her own right or by marriage) cannot be arreſted in civil caſes; and they have alſo many peculiar privileges annexed to their peerage in the courſe of judicial proceedings. A peer ſitting in judgment gives not his verdict upon oath, like an ordinary juryman, but upon his honour; he anſwers alſo to bills in chancery upon his honour, and not upon his oath: but when he is examined as a witneſs either in civil or criminal caſes, he muſt be ſworn; for the reſpect which the law ſhows to the honour of a peer does not extend ſo far as to overturn a ſettled maxim, that *in judicio non creditur niſi juratus*. The honour of peers is however ſo highly tendered by the law, that it is much more penal to ſpread falſe reports of them and certain other great officers of the realm, than of other men; ſcandal againſt them being called by the peculiar name of *ſcandalum magnatum*, and ſubjected to a peculiar puniſhment by divers ancient ſtatutes. A peer cannot loſe his nobility but by death or attainder; though there was an inſtance, in the reign of Edward IV. of the degradation of George Neville duke of Bedford by act of parliament, on account of his poverty, which rendered him unable to ſupport his dignity. But this is a ſingular inſtance, which ſerves at the ſame time, by having happened, to ſhow the power of parliament; and by having happened but once, to ſhow how tender the parliament hath been in exerting ſo high a power. It hath been ſaid indeed, that if a baron waſtes his eſtate, ſo that he is not able to ſupport the degree, the king may degrade him: but it is expreſsly held by later authorities, that a peer cannot be degraded but by act of parliament.

(4.) NOBILITY, SCOTTISH. The E. of Buchan in his *Introd.* to the *Life of Fletcher*, ſpeaks in very ſtrong terms of the power of the ancient Scottiſh nobility. "The king and the ſlaves (ſays he, p. viii.) were, in fact, the only people, and the nobility was the *prince*. The king, therefore, with the ſlaves, *aſſumed* the ſtation of the people, and cruſhed more or leſs in different ages *the prince*, combined and compoſed of the great proprietors of the ſoil."—"The nobility of Scotland were the *Earls* and *Lords of Regality*. Scotland never knew ſuch a monſtrous order of men as *Lords of Parliament*. The earls had no right to ſit in the parliament, but by their lands; but being chief magiſtrates and judges in their counties, with regal powers, theſe, with their territorial advantages ſpringing from the feudal ſyſtem, rendered them truly formidable both to the king and to the commonwealth. James I. ſaw the advantages reaped in England by the crown, in conſequence of the formation of a peers houſe of parliament and the power of calling up great commoners by writ of ſummons to that houſe of parliament, and wiſhed to adopt ſo crafty an example. On the trial of Murdock, D. of Albany, he eſtabliſhed a precedent for what were called *Barons of Baronrent*, to be called LORDS and NOBLES, and to ſit with precedence in the parliament by royal charter of lands, erecting eſtates into *earldoms* or *baronies*, unconnected with the ancient earldoms or county palatines of the kingdom; and then by the election of certain members of parliament for preparing the laws or acts, who were called *Lords of the Articles*, choſen from the earls, barons of baron-rent, and the great officers of the ſtate, he contrived to quaſh or prevent motions that were adverſe to the intereſt of the crown," p. xi—xiv.

(1.) * NOBLE. *adj.* [*noble*, Fr. *nobilis*, Lat.] 1. Of an ancient and ſplendid family. 2. Exalted to a rank above commonalty.—

From virtue firſt began,
The diff'rence that diſtinguiſh'd man from man:
He claim'd no title from deſcent of blood,
But that which made him *noble* made him good.
Dryden.

3. Great; worthy; illuſtrious; both men and things.—Thus this man died, leaving his death for an example of a *noble* courage, and a memorial of virtue. 2. *Mac.* vi. 31.—

To vice induſtrious, but to *nobler* deeds
Tim'rous. *Milton.*

A *noble* ſtroke he lifted high. *Milton.*

—Thoſe two great things, that ſo engroſs the deſires and deſigns of both the *nobler* and ignobler ſort of mankind, are to be found in religion: namely, wiſdom and pleaſure. *South.* 4. Exalted; elevated; ſublime.—

Statues, with winding ivy crown'd, belong
To *nobler* poets, for a *nobler* ſong. *Dryden.*

5. Magnificent; ſtately: as, a *noble* parade. 6. Free; generous; liberal. 7. Principal; capital; as, the heart is one of the *noble* parts of the body.

(2.) * NOBLE. *n. ſ.* 1. One of high rank.—Upon the *nobles* of the children of Iſrael he laid not his hand. *Ex.*

How many *nobles* then ſhould hold their places
That muſt ſtrike ſail to ſpirits of vile ſort! *Sh.*

—What the *nobles* once ſaid in parliament, Nolumus leges Angliæ mutari, is imprinted in the hearts of all the people. *Bacon*—The *nobles* amongſt the Romans took care in their laſt wills, that they might have a lamp in their monuments. *Wilkins.*

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See all our *nobles* begging to be ſlaves,
See all our fools aſpiring to be knaves. *Pope.*

—It may be the diſpoſition of young *nobles*, that they expect the accompliſhment of good education without the leaſt expenſe of time or ſtudy. *Swift's Mod. Educ.*—The ſecond natural diviſion of power is of ſuch men who have acquired large poſſeſſions, &c.—Thus commences a great council ſenate of *nobles*, for the weighty affairs of the nation. *Swift.*

Men ſhould preſs forward in Fame's glorious chaſe;
Nobles look backward and ſo loſe the race. *Young.*

2. A coin rated at ſix ſhillings and eight-pence; the ſum of ſix and eight-pence.—He coined *nobles* of noble, fair, and fine gold. *Camden.*—

Many fair promotions
Are daily given, to ennoble thoſe
That ſcarce, ſome two days ſince, were worth a *noble*. *Shak.*

—Upon every writ procured for debt or damage, amounting to forty pounds or more, a *noble*, that is ſix ſhillings and eightpence, is, and uſually hath been paid to fine. *Bacon.*

(3.) *A* NOBLE, (§ 2, *def.* 1.) is a perſon who has a privilege which raiſes him above a commoner, or peaſant, either by birth, by office, or by patent from his prince. The original word *nobilis* is formed of the ancient *noſcibilis*, *diſtinguiſhable*, or *remarkable*. In England, the word *noble* is of a narrower import than in other countries; being confined to perſons above the degree of knights; whereas abroad, it comprehends not only knights, but *gentlemen*. The nobles of England are alſo called *pares regni*, as being *nobilitate pares*, though *gradu impares*. The ci-devant Venetian *nobleſſe* was famous. In that body the ſovereignty of the ſtate reſided. It was divided into 3 claſſes. The firſt only comprehended 24 families. The 2d included the deſcendants of all thoſe who were entered in the golden book, in 1289, and deſtined to govern the ſtate, which then began to be ariſtocratic. The third conſiſted of ſuch as had bought the dignity of noble Venetians. This laſt claſs was only admitted to the inferior employments; the two former to all indifferently. The title of *noble Venetian* was ſometimes alſo given to foreign kings, princes, &c.

(4.) *The* NOBLE, (§ 2, *Def.* 2.) was anciently a coin ſtruck in the reign of Edward III. and then called the *penny of gold*; but afterwards a *roſe noble*, from its being ſtamped with a roſe.

(5.) NOBLES, among the ancient Greeks, were called Ευπατριδαι, as deſcended from thoſe heroic anceſtors ſo famous in hiſtory. Such were the *Praxiergidæ*, *Etrobutidæ*, *Alcmæonidæ*, &c. all of whom had many privileges annexed to their quality; amongſt which this was one, that they wore graſhoppers in their hair as a badge of nobility.

(6.) NOBLES, among the ancient Romans, were ſuch as had the *jus imaginum*, or the right of uſing the pictures or ſtatues of their anceſtors; a right which was allowed only to thoſe whoſe anceſtors had born ſome *curule* offiee, that is, had been *curule*, *ædile*, *cenſor*, *prætor*, or *conſul*. For a long time, none but the *Patricii* were the *nobiles*, becauſe no perſon but of that ſuperior rank could bear any *curule* office; hence in Livy, Salluſt, &c. *nobilitas* is uſed to ſignify the Patrician order, and ſo oppoſed to *plebs*. To make the true meaning of *nobilis* ſtill more clear, let it be obſerved that the Roman people were divided into *nobiles*, *novi*, and *ignobiles*. *Nobiles* were they who had the pictures, &c. of their anceſtors; *novi* were ſuch as had only their own; *ignobiles* were ſuch as had neither. See JUS, § 7. The Roman nobility, by way of diſtinction, wore an half moon upon their ſhoes, eſpecially thoſe of Patrician rank.

(1.) * NOBLE LIVERWORT. [Hepatica.] A plant.

(2.) * NOBLE LIVERWORT. See ANEMONE.

* NOBLEMAN. *n. ſ.* [*noble* and *man*.] One who is ennobled.—

If I bluſh,
It is to ſee a *nobleman* want manners. *Shak.*
The *nobleman* is he whoſe noble mind
Is fill'd with inborn worth. *Dryden.*

* NOBLENESS. *n. ſ.* [from *noble*.] 1. Greatneſs; worth; dignity; magnanimity.—

The *nobleneſs* of life
Is to do this; when ſuch a mutual pair
And ſuch a twain can do't. *Ant. and Cleop.*
Any thing
That my ability may undergo,
And *nobleneſs* impoſe. *Shak. Wint. Tale.*
True *nobleneſs* would
Learn him forbearance from ſo foul a wrong. *Shak.*

—He that does as well in private between God and his own ſoul as in public, hath given himſelf a teſtimony that his purpoſes are full of honeſty, *nobleneſs*, and integrity. *Taylor.*—

Greatneſs of mind, and *nobleneſs*, their ſeat
Build in her loveliеſt. *Milton's Par. Loſt.*

—There is not only a congruity herein between the *nobleneſs* of the faculty and the object, but alſo the faculty is enriched and advanced by the worth of the object. *Hale.*—You have not only been careful of my fortune, which was the effect of your *nobleneſs*, but you have been ſolicitous of my reputation, which is that of your kindneſs. *Dryden.* 2. Splendour of deſcent; luſtre of pedigree.

* NOBLESS. *n. ſ.* [*nobleſſe*, French.] 1. Nobility. This word is not now uſed in any ſenſe.—

Fair branch of *nobleſs*, flower of chivalry,
That with your worth the world amazed make. *Spenſer.*

2. Dignity; greatneſs.—

Thoſe whoſe *nobleſs* keeps one ſtature ſtill,
And one true poſture, tho' beſieg'd with ill. *Ben Johnſon.*

3. Noblemen collectively.—

Let us haſte to hear it,
And call the *nobleſs* to the audience. *Shak.*

—I know no reaſon we ſhould give that advantage to the commonalty of England to be foremoſt in brave actions, which the *nobleſs* of France would never ſuffer in their peaſants. *Dryden.*

* NOBLY. *adv.* [from *noble*.] 1. Of ancient and ſplendid extraction.—

Only a ſecond laurel did adorn
His colleague Catulus, tho' *nobly* born. *Dryd.*

2. Greatly; illuſtriouſly; magnanimouſly.—

Did he not ſtraight the two delinquents tear?
Was not that *nobly* done? *Shak. Macbeth.*

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This fate he could have ſcap'd but would not loſe
Honour for life; but rather *nobly* choſe
Death from their fears, than ſafety from his own. *Denham.*

3. Grandly; ſplendidly.—There could not have been a more magnificent deſign than that of Trajan's pillar. Where could an emperor's aſhes have been ſo *nobly* lodged, as in the midſt of his metropolis, and on the top of ſo exalted a monument. *Addiſon on Italy.*

* NOBODY. *n. ſ.* [*no* and *body*.] No one; not any one.—This is the tune of our catch played by the picture of *nobody*. *Shak. Tempeſt.*—It fell to Cocke's turn, for whom *nobody* cared, to be made the ſacrifice; and he was quit of his office. *Clarendon.*—If in company you offer ſomething for a jeſt, and *nobody* ſeconds you on your own laughter, you may condemn their taſte, and appeal to better judgment; but in the mean time you make a very indifferent figure. *Swift.*

NOCARIO, a town of the French empire, in the iſland and department of Corſica; 12 miles NE. of Corte.

(1.) NOCE, a river of Germany, in Tirol, running into the Adige; 10 miles N. of Trent.

(2.) NOCE, a town of France in the department of Orne; 4½ miles E. of Belleſme.

* NOCENT. *adj.* [*nocens*, Latin.] 1. Guilty; criminal.—The earl of Devonſhire being intereſted in the blood of York, that was rather feared than *nocent*; yet as one, that might be the object of others plots, remained priſoner in the Tower during the king's life. *Bacon's Henry* VII. 2. Hurtful; miſchievous.—

Not yet in horrid ſhade, or diſmal den,
Nor *nocent* yet; but on the graſſy herb.
Pearleſs unfear'd he ſlept. *Milt. Par. Loſt.*
The warm limbec draws
Salubrious waters from the *nocent* brood. *Philips.*

—They meditate whether the virtues of the one will exalt or diminiſh the force of the other, or correct any of its *nocent* qualities. *Watts on the Mind.*

(1.) NOCERA, a town and biſhop's ſee of Italy in the Pope's dominions, and duchy of Spoleto, 26 miles NE. of Spoleto. Lon. 30. 27. E. Ferro. Lat. 43. 7. N.

(2.) NOCERA, or NOCERA DI PAGANI, an epiſcopal city, which might with propriety be ſtyled *a cluſter of villages*; its parts being extended along the foot of the mountains, form the Citta Sotana, or low town; and the biſhop's palace, together with ſome convents embowered in cypreſs groves, cover the peak of a ſingle hill in a very picturesque manner, and compoſe the Citta Soprana. Nocera contains near 30,000 inhabitants; they are diſperſed in forty patches of habitation. Their houſes are conſtructed of two kinds of ſtone: the common walls are built with yellow tufa dug out of the hills that lie about a mile E. of the town; which ſtone ſeems unqueſtionably to have been formed by a conſolidation of ſubſtances thrown out of Veſuvius, becauſe, on opening theſe quarries, the workmen have frequently diſcovered tombs, vaſes, and coins locked up in the body of the ſtony ſtratum. The caſes of their doors and windows are made of a black ſtone drawn from the hill of Fiano, two miles to the north; it lies 8 feet below the ſurface, in a bed or vein 140 feet thick, reſting upon a baſe of ſand. This ſeems evidently to be a ſtream of lava congealed. Nocera is a place of very conſiderable antiquity: in the 13th century it was called *di Pagani*, to diſtinguiſh it from the above city (N° 1.) and in alluſion to a colony of Saracens which Frederick of Suabia brought from Sicily, and ſettled here, that they might be out of the way of their dangerous connections with Africa. It was anciently called LUCERIA, and NUCERIA ALPHATERNA; was a Roman colony, and had a mint. It has often been confounded with *Lucera* by negligent or ignorant chroniclers. The moſt remarkable event that occurs in its hiſtory is the ſiege of its caſtle, A. D. 1384. Lon. 12. 55. E. Lat. 43. 2. N.

NOCERIANA TERRA, *Earth of Nocera*, in the materia medica, a ſpecies of bole remarkably heavy, of a greyiſh white colour, of an inſipid taſte, and generally with ſome particles in it which grit between the teeth. It is much eſteemed by the Italians as a remedy for venemous bites, and in fevers; but, excepting as an abſorbent and aſtringent no dependence is to be had on it.

NOTCHTIE, a ſmall river of Aberdeenſhire, which runs into the Don, near Strathdon church.

* NOCK. *n. ſ.* [*nocchia*, Italian.] 1. A ſlit; a nick; a notch. 2. The fundament. *Les feſſes.*—

When the date of *nock* was out,
Off dropt the ſympathetick ſnout. *Hudib.*

* *To* NOCK. *v. a.* To place upon the notch.—

Then tooke he up his bow
And *nocke* his ſhaft, the ground whence all their
fature griefe did grow. *Chapman.*

NOCKAMIKON, a town and townſhip of Penſylvania, in Bucks county.

(1.) * NOCTAMBULO. *n. ſ.* [*nox* and *ambulo*, Latin.] One who walks in his ſleep.—Reſpiration being carried on in ſleep, is no argument againſt its being voluntary. What ſhall we ſay of *noctambulos?* There are voluntary motions carried on without thought to avoid pain. *Arbuth.*

(2.) NOCTAMBULOS, NOCTAMBULI, SOMNAMBULI, or NIGHT-WALKERS. Schenkius, Horſtius, Clauderus, and Hildanus, who have wrote of ſleep, give us various unhappy hiſtories of noctambuli. When the diſeaſe is moderate, the perſons affected with it only repeat the actions of the day on getting out of bed, and go quietly to the places they frequented at other times; but thoſe who have it in the moſt violent degree, go up to dangerous places, and do things that would terrify them to think of when they are awake. Theſe are by ſome called *lunatic* night-walkers, becauſe fits are obſerved to return with the moſt frequency and violence at the changes of the moon.—For the cure ſome recommend purging and a cooling regimen: others are of opinion that the beſt method is to place a veſſel of water at the patient's bedſide in ſuch a manner that he will naturally ſtep into it when he gets out of bed; or if that ſhould fail, a perſon ſhould ſit up to watch and beat him every time it happens. See MEDICINE, *Index*, and SLEEP WALKERS.

* NOCTIDIAL. *adj.* [*noctis* and *dies*, Latin.] Comprising a night and a day.—The *noctidial* day, the lunar periodic month, and the ſolar year, are natural

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natural and universal; but incommensurate each to another, and difficult to be reconciled. *Holder.*

* NOCTIFEROUS. *adj.* [*nox* and *fero.*] Bringing night. *Dict.*

(1.) NOCTILUCA, a species of phosphorus, so called because it shines in the dark without any light being thrown upon it; such is the phosphorus made of urine. See PHOSPHORUS.

(1.) NOCTILUCA, in pagan worship, a surname of DIANA. A temple was erected at Rome on Mount Palatine, to Diana Noctiluca. *Varro* de L. L. iv. *Hor.* iv. od. 6.

(3, 4. NOCTILUCA, in zoology. See LAMPYRIS, and NEREIS, N° 5.

* NOCTIVAGANT. *adj.* [*noctivagus.*] Wandering in the night. *Dict.*

* NOCTUARY. *n. f.* [from *nox*, *noctis*, Latin.] An account of what passes by night.—I have got a parcel of visions and other miscellanies in my *noctuary*, which I shall send to enrich your paper. *Addison.*

NOCTURLABIUM. See NOCTURNAL, § 3.

* NOCTURN. *n. f.* [*nocturne*, Fr. *nocturnus*, Latin.] An office of devotion performed in the night.—The reliques being conveniently placed before the church door, the vigils are to be celebrated the night before them, and the *nocturn* and the mattins for the honour of the saints whose the reliques are. *Stilling fleet.*

(1.) * NOCTURNAL. *adj.* [*nocturnus*, Latin.] Nightly.

From gilded roofs depending lamps display
Nocturnal beams, that emulate the day. *Dryd.*

—I beg leave to make you a present of a dream, which may serve to lull your readers till such time as you yourself shall gratify the public with any of your *nocturnal* discoveries. *Addison.*

(2.) * NOCTURNAL. *n. f.* An instrument by which observations are made in the night.—That projection of the stars which includes all the stars in our horizon, and therefore reaches to the thirty-eight degree and a half of southern latitude, though its centre is the north pole, gives us a better view of the heavenly bodies as they appear every night to us; and it may serve for a *nocturnal*, and shew the true hour of the night. *Watts.*

(3.) *The* NOCTURNAL, or NOCTURLABIUM, (§ 2.) is chiefly used at sea, to take the altitude or depression of some stars about the pole, in order to find the latitude and hour of the night. Some nocturnals are hemispheres, or planispheres, on the plane of the equinoctial. Those commonly used among seamen are two; the one adapted to the polar star, and the first of the guards of the Little Bear; the other to the pole star, and the pointers of the Great Bear. This instrument consists of two circular plates, applied to each other. The greater, which has a handle to hold the instrument, is about 2½ inches diameter, and is divided into 12 parts, agreeing to the 12 months; and each month divided into every 5th day; so as that the middle of the handle corresponds to that day of the year wherein the star here regarded has the same right ascension with the sun. If the instrument be fitted for two stars, the handle is made moveable. The upper left circle is divided into 24 equal parts for the 24 hours of the day, and each hour subdivided into quarters. These 24 hours are noted by 24 teeth to be told in the night. Those at the hour 12 are distinguished by their length. In the centre of the two circular plates is adjusted a long index, moveable upon the upper plate; and the three pieces, viz. the two circles and index, are joined by a rivet which is pierced through the centre with a hole, through which the star is to be observed. (See *Pl.* CCXLVI.) To use the nocturnal, turn the upper plate till the long tooth marked 12 be against the day of the month on the under plate; then bringing the instrument near the eye, suspend it by the handle with the plane nearly parallel to the equinoctial, and viewing the pole star through the whole of the centre, turn the index about, till, by the edge coming from the centre, you see the bright star or guard of the Little Bear, (if the instrument be fitted to that star); then that tooth of the upper circle, under the edge of the index, is at the hour of the night on the edge of the hour circle: which may be known without a light, by counting the teeth from the longest, which is for the hour 12.

(4.) NOCTURNAL ARCH, the arch of a circle, described by the sun, or a star in the night.

(1.) NOD, or *the land of* NOD, the country to which Cain withdrew after his fratricide. (*Gen.* iv. 16.) The Septuagint, as well as Josephus, read *Naid* instead of *Nod*, and have taken it for the name of a place. It is not known what country this was, unless it was NYSE or NYSEA, towards Hyrcania. St Jerome and the Chaldee interpreters have taken the word Nod in the sense of an apellative, for *vagabond* or *fugitive*; "He dwelt a fugitive in the land." But the Hebrew reads, "He dwelt in the land of Nod." *Gen.* iv. 16.

(2.) * NOD. *n. f.* [from the verb.] 1. A quick declination of the head.—Children being to be restrained by the parents only in vicious things; a look or *nod* only ought to correct them when they do amiss. *Locke on Education.*—

A mighty king I am, an earthly god;
Nations obey my word, and wait my *nod*. *Prior.*

2. A quick declination.—

Like a drunken sailor on a mast,
Ready with every *nod* to tumble down. *Rich.* III.

3. The motion of the head in drowsiness.—Every drowsy *nod* shakes their doctrine who teach, that the soul is always thinking. *Locke.* 4. A slight obeisance.—Will he give you the *nod*? *Troil. and Cress.*—Since the wisdom of their choice is rather to have my cap than my heart, I will practise the insinuating *nod*, and be off to them most counterfeitly. *Shak. Coriolanus.*

* *To* NOD. *v. n.* [Of uncertain derivation; *nuo*, Gr. *nuto*, Lat. *amneidio*, Welsh.] 1. To decline the head with a quick motion.—

Let every feeble rumour shake your hearts;
Your enemies with *nodding* of their plumes,
Fan you in despair. *Shak Coriolanus.*

Cleopatra hath *nodded* him to her. *Shak.*

On the faith of Jove rely,
When *nodding* to thy suit he bows the sky. *Dryd.*

2. To pay a slight bow.—

Cassius must bend his body,
If Cæsar carelessly but *nod* on him. *Shak.*

3. To

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5. To bend downwards with quick motion.—

Lab'ring in pangs of death, and threat'ning all,
This way and that she *nods*. *Dryden.*

He climbs the mountain rocks,
Fir'd by the *nodding* verdure of its brow. *Thomf.*

4. To be drowsy.—Your two predeceſſors were famous for their dreams and viſions, and, contrary to all other authors, never pleaſed their readers more than when they were *nodding*. *Addiſon.*

NODAB, a country bordering upon Iturea and Idumæa, but now unknown. We read in the Chronicles, that the tribe of Reuben, aſſiſted by thoſe of Gad and Manaſſeh, had a war againſt the Hagarites, the Jeturites, and the people of Nephiſh and of Nodab, in which the Iſraelites had the advantage. 1 Chr. v. 19. But the time and the other particulars of this war are unknown.

NODAR, or NOUDAR, a town of Portugal, in Alentejo, 21 miles SE. of Mourao, and 24 E. of Moura.

NODATED HYPERBOLA, a name given by Sir Iſaac Newton to a kind of hyperbola, which, by turning round, decuſſates or croſſes itſelf.

* NODATION. *n. ſ.* [from *nodo*.] The ſtate of being knotted, or act of making knots.

* NODDER. *n. ſ.* [from *nod*.] One who makes nods.—A ſet of *nodders*, winkers, and whiſperers, whoſe buſineſs is to ſtrangle all other offspring of wit in their birth. *Pope.*

* NODDLE. *n. ſ.* [*thnol*, Saxon.] A head, in contempt.—

Her care ſhall be
To comb your *noddle* with a three-legg'd ſtool.
Shak.

Let our wines without mixture, or ſtain, be all fine,
Or call up the maſter and break his dull *noddle*.
Ben Jonſon.

My head's not made of braſs,
As friar Bacon's *noddle* was. *Hudibras.*

—He would not have it ſaid before the people, that images are to be worſhipped with Latria, but rather the contrary, becauſe the diſtinctions neceſſary to defend it are too ſubtile for their *noddles*. *Stillingfleet.*—Come, maſter, I have a project in my *noddle*, that ſhall bring my miſtreſs to you back again, with as good will as ever ſhe went from you. *L'Eſtrange.*—

Impartial Proſerpine beholds the truth;
And laughing at ſo fond and vain a taſk,
Will ſtrip thy hoary *noddle* of its maſk. *Addiſ.*

Thou that art ever half the city's grace,
And add'ſt to ſolemn *noddles* ſolemn pace.
Fenton.

(1.) * NODDY. *n. ſ.* [from *naudin*, French.] A ſimpleton; an idiot.—The whole race of bawling, fluttering *noddies*, by what title ſoever dignified, are akin to the aſs in this fable. *L'Eſtrange.*

(2.) NODDY, in ornithology. See STERNA.

(1.) * NODE. *n. ſ.* [*nodus*, Latin.] 1. A knot; a knob. 2. A ſwelling on the bone.—If *nodes* be the cauſe of the pain, foment with ſpirit of wine wherein opium and ſaffron have been diſſolved. *Wiſeman.* 3. Interſection.—All theſe variations are finiſhed in nineteen years, nearly agreeing with the courſe of the *nodes*; i. e. the points in the ecliptic where the moon croſſeth that circle as ſhe paſſeth to her northern or ſouthern latitude; which *nodes* are called the head and tail of the dragon. *Holder.*

(2.) *A* NODE, (§ 1. *def.* 2.) is a tumour on the bones, uſually proceeding from ſome venereal cauſe; being much the ſame with what is called EXOSTOSIS.

(3.) NODE, or NODUS, in dialling, a certain point or pole in the gnomon of a dial, by the ſhadow or light whereof either the hour of the day in dials without furniture, or the parallels of the ſun's declination, and his place in the ecliptic, &c. in dials with furniture, are ſhown. See DIALLING.

(4.) NODES, in aſtronomy, (§ 1, *def.* 3.) are the two points where the orbit of a planet interſects the ecliptic. Such are the two points C and D; (*Pl.* 246, N° 1.) of which the node C, where the planet aſcends northward above the plane of the ecliptic, is called the *aſcending node*, or the *dragon's head*, and is marked thus ☊. The other node D, where the planet deſcends to the ſouth, is called the *deſcending node*, or the *dragon's tail*, marked thus ☋. The line CD, wherein the two circles CEDF and CGDH interſect, is called the *line of nodes*. It appears from obſervation, that the line of the nodes of all the planets conſtantly changes its place, and ſhifts its ſituation from E. to W. contrary to the order of the ſigns; and that the line of the moon's nodes, by a retrograde motion, finiſhes its circulation in the compaſs of 19 years; after which time, either of the nodes having receded from any one point of the ecliptic, returns to the ſame again; and when the moon is in the node, ſhe is alſo ſeen in the ecliptic. If the line of nodes were immoveable, that is, if it had no other motion than that whereby it is carried round the ſun, it would always look to the ſame point of the ecliptic, or would keep parallel to itſelf, as the axis of the earth does. From what hath been ſaid, it is evident, that the moon can never be obſerved preciſely in the ecliptic, but twice in every period; that is, when ſhe enters the nodes. When ſhe is at her greateſt diſtance from the nodes, viz. in the points E, F, ſhe is ſaid to be in her limits. The moon muſt be in or near one of the nodes, when there is an eclipſe of the ſun or moon. To make this ſtill clearer, let the plane of N° 2. repreſent that of the ecliptic, S the ſun, T the centre of the earth, L the moon in her orbit D N *d n*. N *n* is the line of the nodes paſſing between the quadrature Q and the moon's place L, in her laſt quarter. Let now LP, or any part LS, repreſent the exceſs of the ſun's action at T; and this being reſolved into the force LR, perpendicular to the plane of the moon's orbit, and PR parallel to it, it is the former only that has any effect to alter the poſition of the orbit, and in this it is wholly exerted. Its effect is twofold: 1. It diminiſhes its inclination by a motion which we may conceive as performed round the diameter D *d* to which LT is perpendicular. 2. Being compounded with the moon's tangential motion at L, it gives an intermediate direction L *t*, through which and the centre a plane being drawn, muſt meet the ecliptic nearer the conjunction C than before.

NODESDALE, a river of Scotland, in Ayrſhire, which runs into the Frith of Clyde at Largs.

NODHA

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NODHA, a town of Perfia, in Mecran.

NODHEA, a town of Perfia, in Kirman.

(1.) NODINGEN, an iſland of Sweden, in the North Sea, near the W. coaſt. Lon. 11. 50. E. Lat. 57. 16. N.

(2.) NODINGEN, a town of Sweden, in W. Gothland.

* NODOSITY. *n. ſ.* [from *nodoſus*, Lat.] Complication; knot.—Theſe the midwife cutteth off, contriving them into a knot cloſe unto the body of the infant; from whence enſueth that tortuoſity, or complicated *nodoſity* we call the navel. *Brown.*

* NODOUS. *adj.* [*nodoſus*, Lat.] Knotty; full of knots.—This is ſeldom affected with the gout, and when that becometh *nodous*, men continue not long after. *Brown.*

* NODULE. *n. ſ.* [*nodulus*, Lat.] A ſmall lump —Thoſe minerals in the ſtrata, are either found in grains, or elſe they are amaſſed into balls, lumps, or *nodules*: which *nodules* are either of an irregular figure, or of a figure ſomewhat more regular. *Woodward.*

NODUS. See NODE, § 3.

NODZ, a town of France, in the dep. of the Doubs, 7½ miles E. of Ornans.

(1.) NOE. See NOAH.

(2.) NOE, a town of France, in the dep. of Upper Garonne, on the Garonne; 7½ miles S. of Muret, and 17 S. of Toulouſe.

(1.) NOEL, Alexander, an indefatigable writer of the 17th century, born at Roan in Normandy, 1639. After finiſhing his ſtudies at Roan, he entered into the order of Dominican friars, and was profeſſed there in 1655. Soon after he went to Paris, to ſtudy philoſophy and divinity in the great convent, where he diſtinguiſhed himſelf ſo, that he was appointed to teach philoſophy there, which he did for 12 years. Mr Colbert ſhowed him many marks of his eſteem; and being determined to omit nothing to perfect the education of his ſon, afterwards Abp. of Roan, he formed an aſſembly of the moſt learned perſons, whoſe conferences upon eccleſiaſtical hiſtory might be of advantage to him. Noel was invited to this aſſembly, where he exerted himſelf with ſo much genius and ability, that he gained the particular friendſhip of young Colbert, who ſhowed him the utmoſt regard as long as he lived. Theſe conferences gave riſe to his deſign of writing an eccleſiaſtical hiſtory; for, being deſired to reduce what was material in theſe conferences to writing, he did it with ſo much accuracy, that the learned men who compoſed this aſſembly, adviſed him to undertake a complete body of church hiſtory. This he executed with great aſſiduity, collecting and digeſting the materials himſelf, and writing even the tables with his own hand. He at laſt completed his work in 1686. Towards the latter part of his life, he was afflicted with the loſs of his ſight; which he bore with great reſignation. He died in 1724, aged 80.

(2, 3.) NOEL, 2 iſlands in the Indian Ocean, near the coaſt of Siam. Lon. 96° 30′, to 96° 48′ E. Lat. 10° 33′, to 10° 47′ N.

(1.) NOEOMAGUS LEXUVIORUM, a town of Gaul, thought to be the *Civitas Lexoviorum* of the lower age; (*Ptolemy*,) now called LISIEUX.

(2.) NOEOMAGUS TRICASTINORUM, a town of Gallia Narbonenſis; thought to be ST POL *de Trois Chateaux*, ſix miles W. of Nyons.

NOERINGBERG, a town of Brandenburg, 16 miles N. of Arenſwald.

NOETIANS, in church hiſtory, Chriſtian heretics in the 3d century, followers of NOETIUS; whoſe hereſy conſiſted in affirming that there was but one perſon in the Godhead; and that the Word and the Holy Spirit were but external denominations given to God in conſequence of different operations; that, as Creator, he is called *Father*; as Incarnate, *Son*; and as deſcending on the apoſtles, *Holy Ghoſt*.

NOETIUS, a philoſopher of Epheſus, the founder of the ſect of NOETIANS. He pretended that he was another Moſes ſent by God, and that his brother was another Aaron.

NOEWE, a town of Tenneſſee, 21 miles S. of Knoxville.

NOFUENTES, a town of Spain, in Old Caſtile, 6 miles N. of Frias.

NOGALES, a town of Spain, in Eſtremadura, 20 miles SSE. of Badajoz.

(1.) NOGARA, a town of France, and capital of a diſtrict, in the dep. of Gers; 21 miles SW. of Condom, and 27 WNW. of Auch. Lon. 12. 37. E. of Ferro. Lat. 43. 46. N.

(2.) NOGARA, a town of Germany, in the Tyroleſe; 9 miles NE. of Trent.

(3.) NOGARA, a town of Italy, in the dep. of the Mincio, and diſtrict, late duchy, of Verona; 13 miles W. of Legnano.

NOGARCOT, a town of Indoſtan, in the prov. of Napaul, with a famous pagoda; 50 miles NE. of Catmandu, and 75 SW. of Tankia.

NOGARUOLA, a town of Italy in the dep. of the Mincio diſtrict, and ci-devant duchy of Verona: 19 miles SSE. of Verona.

NOGELN, a town of Pruſſia, in Samland.

NOGENT, the name of 7 towns of France, diſtinguiſhed as follows:

1. NOGENT LE BERNHARD, in the dep. of the Sarte, 18 miles NNE. of Mans.

2. NOGENT LE ROTROU, in the dep. of Eure and Loire, and ci-devant prov. of Beauce, ſeated on the Huiſne, 27 miles SW. of Chartres, and 35 NE. of Mans. Lon. 0. 50. E. Lat. 48. 20. N.

3, 4. NOGENT LE ROI: 1. in the dep. of the Eure, and diſtrict of Dreux, near the Eure; 12 miles N. of Chartres, and 12 SE. of Dreux: 2. in that of the Upper Marne, 9 miles SE. of Chaumont, and 10½ N. of Langres. Probably the royal diſtinctive epithet of *Le Roi* is now laid aſide with regard to both theſe towns.

5. NOGENT SUR MARNE, in the dep. of Paris, on the Marne, 6 miles SE. of Paris.

6. NOGENT SUR SEINE, or as Mr Cruttwell has it EN SEINE, in the dep. of the Aube, on the Seine; 9 miles ESE. of Provins, and 28 NW. of Troyes. Lon. 3. 40. E. Lat. 48. 30. N.

7. NOGENT SUR VERNISSON, in the dep. of Loiret, 9 miles S. of Montargis.

* NOGGEN. *adj.* Hard; rough; harſh.—He put on a hard, coarſe, *noggen* ſhirt of Pendrels. *Eſcape of King Charles.*

* NOGGIN. *n. ſ.* [*noſſel*, German.] A ſmall mug.

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mug.—Frog laughed in his sleeve, gave the squire the other *noggin* of brandy, and clapped him on the back. *Arbuthnot.*

NOGUERA, the name of two rivers of Spain, in Catalonia, which are thus distinguished:

1. NOGUERA PALERESA, running into the Segré, 4 miles N. of Balaguer:

2. NOGUERA RIBAGORÇANA, running into the Segré, 10 miles S. of Balaguer.

NOHAVEL, a town of Ireland, in Cork.

NOHN, a town of France, in the dep. of the Moselle; 17 miles NE. of Thionville.

NOHOTHA, a river of Thibet, which runs into the Sanpoo, 21 miles WSW. of Tankia.

NOIA, 3 towns of Naples: 1. in Bari, 6 miles WSW. of Conversano: 2. in Basilicata, 12 miles WSW. of Turfi: 3. in Otranto, 5 miles SE. of Nardo.

* NOIANCE. *n. f.* [See ANNOISANCE.] Mischief; inconvenience.—

To borrow to-day, and to-morrow to miss,
For lender and borrower *noiance* it is. *Tusser.*

The single and peculiar life is bound,
With all the strength and armour of the mind,
To keep itself from *noiance*. *Shak.*

* *To* NOIE. *v. a.* To annoy. An old word disused.—

Let servant be ready with mattock in hand,
To stub out the bushes that *noieth* the land.
Tusser.

* NOIER. *n. f.* [from *noie*.] One who annoys An old word in disuse.—

The north is a *noier* to grass of all suits,
The east a destroyer to herbs and all fruits.
Tusser.

NOIERA, a town of Naples in Principato Citra; 7 miles WNW. of Salerno.

NOILSBERG, a town of Bohemia, in the circle of Leitmeritz, 18 miles NW. of Leitmeritz.

* NOIOUS. *adj.* [*noioso*, Italian.] Hurtful; mischievous; troublesome; inconvenient. Obsolete.—Being bred in a hot country, they found much hair on their faces to be *noious* unto them. *Spenf.*—

The false Duessa, leaving *noious* night,
Return'd to stately palace of dame Pride. *Spenf.*

But neither darkness foul, nor filthy bands,
Nor *noious* smell his purpose could with-hold.
Spenser.

NOIR, CAPE, a cape of S. America, at the SW. extremity of Terra del Fuego. Lon. 73. 3. W. Lat. 54. 43. S.

NOIRE, a river of the United States in the North Western territory, which runs W. by S. and falls into Lake Michigan, 15 miles N. of St Joseph.

NOIREAU, a river of France, running into the Orne, 4 miles NNE. of Clecy, in the dep. of Calvados.

NOIRETABLE, a town of France, in the dep. of Rhone and Loire, 18 miles SSW of Roanne.

NOIRMOTIER See NOIRMOUTIER.

NOIRMOUNT, a cape on the S. coast of the Isle of Jersey, at the entrance of St Aubin's bay.

(1.) NOIRMOUTIER, an island of France, in the dep. of the Vendee, separated from the coast by a strait about a mile wide, 9 miles long, and from 1 to 3 broad, according to Mr Cruttwell; but Dr Brookes and J. Walker make it 17 miles long and 8 broad. It is full of bogs, yet affords good pasture. Lon. from 15. 20 to 15. 30. E. of Ferro. Lat. 46. 53. to 47. 2. N.

(2.) NOIRMOUTIER, a town of France, with a harbour and bay, on the E. coast of the above island, defended by a fort, called *Fort St Pierre*. This town and fort, though well calculated for defence, were surrendered, along with the whole island, by the French royalists to the republicans, at discretion, on the 2d Jan. 1794, with 50 cannons, 8000 stand of arms, and 30,000lb. of gunpowder. During the siege, though it was short, 800 royalists were killed. Lon. 2. 10. W. Lat. 47. 0. N.

* NOISE. *n. f.* [*noise*, French.] 1. Any kind of sound.—*Noises*, as of waters falling down, sounded about them, and sad visions appeared unto them. *Wisd.* xvii. 4.—Whether it were a whistling sound, or a melodious *noise* of birds among the spreading branches, these things made them swoon. *Wisd.* xvii. 18.—Great motions in nature pass without sound or *noise*. The heavens turn about in a most rapid motion, without *noise* to us perceived. *Bacon.*

Thro' the isle they hear
A lasting *noise*, as horrid and as loud
As thunder makes. *Waller.*

2. Outcry; clamour; boasting or importunate talk.—What *noise* have we had about transplantation of diseases, and transfusion of blood. *Baker.* 3. Occasion of talk.—Socrates lived in Athens during the great plague which has made so much *noise* through all ages, and never caught the least infection. *Addison.* 4. A concert. Obsolete.

(1.) * *To* NOISE. *v. n.* [from the noun.] To sound loud.—

Harm,
Those terrors which thou speak'st of did me none;
Tho' *noising* loud and threat'ning nigh. *Milt.*

(2.) * *To* NOISE. *v. a.* To spread by rumour or report.—All these sayings were *noised* abroad throughout all the hill country. *Luke* i. 65.—I shall not need to relate the affluence of young nobles from hence into Spain, after the voice of our prince's being there had been quickly *noised*. *Wotton.*—They might buz and whisper it one to another; and tacitly withdrawing from the presence of the apostle, they then lift up their voices and *noised* it about the city. *Bentley.*

NOISEFUL. *adj.* [*noise* and *full*.] Loud; clamorous.—

That eunuch, guardian of rich Holland's trade,
Whose *noiseful* valour does no foe invade, *Dryd.*

NOISELESS. *adj.* [from *noise*.] Silent; without sound.

On our quickest decrees,
The inaudible *noiseless* foot of time
Steals, ere we can effect them. *Shak.*

So *noiseless* would I live, such death to find,
Like timely fruit, not shaken by the wind,
But ripely dropping. *Dryden.*

Convinc'd that *noiseless* piety might dwell
In secular retreats, and flourish well. *Hart.*

* NOISEMAKER. *n. f.* [*noise* and *maker*.] Clamourer.

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mourer.—The iſſue of all this noiſe is, the making of the *noiſemaker* ſtill more ridiculous. *L'Eſtrange.*

* NOISINESS. *n. ſ.* [from *noiſy*] Loudneſs of ſound; importunity of clamour.

* NOISOME. *adj.* [*noioſo*, Italian.] 1. Noxious; miſchievous; unwholeſome.—There are particulars, the uſe whereof is utterly unlawful in regard to ſome ſpecial bad and *noiſome* quality. *Hooker.*—

The brake and the cockle are *noiſome* too much. *Tuſſer.*

All my plants I ſave from nightly ill,
Of *noiſome* winds, and blaſting vapours. *Milton.*

Gravida *noiſome* from the neighb'ring fen,
And his own Caere ſent three hundred men. *Dryden.*

The *noiſome* peſt'lence, that in open war
Terrible, marches thro' th' mid-day of air,
And ſcatters death. *Prior.*

2. Offenſive; diſguſting.—

The ſeeing theſe effects will be
Both *noiſome* and infectious. *Shak.*

—Foul words are but foul wind, and foul wind is but foul breath, and foul breath is *noiſome*. *Shak.*—The filthineſs of his ſmell was *noiſome* to all his army. 2 *Mac.* ix. 9.—An error in the judgment, is like an impoſthume in the head, which is always *noiſome*, and frequently mortal. *South.*

* NOISOMELY. *adv.* [from *noiſome*.] With a fetid ſtench; with an infectious ſteam.

* NOISOMENESS. *n. ſ.* [from *noiſome*.] Aptneſs to diſguſt; offenſiveneſs.—If he muſt needs be ſeen, with all his filth and *noiſomeneſs* about him, he promiſes himſelf however, that it will be ſome allay to reproach, to be but one of many to march in a troop. *South.*

(1.) * NOISY. *adj.* [from *noiſe*.] 1. Sounding loud. 2. Clamorous; turbulent.—

O leave the noiſy town, O come and ſee.
Our country cots, and live content with me!
Dryden.

To *noiſy* fools a grave attention lend. *Smith.*—Although he employs his talents wholly in his cloſet, he is ſure to raiſe the hatred of the *noiſy* crowd. *Swift.*

(2.) NOISY, in geography, or NOISY LE SEC, a town of France, in the dep. of Paris; 4½ miles E. of Paris.

NOIZAI, a town of France, in the dep. of Indre and Loire; 6 miles NW. of Amboiſe.

NOLA, a very ancient city of Italy, in Naples, formerly populous and ſtrong, ſituated in a plain NE. of Veſuvius, in Campania, ſaid to be built by the Chalcidians, according to Juſtin and Silius Italicus; according to others, by the Tuſcans. At this place Hannibal met with the firſt check by Marcellus. Veſpaſian added the appellation *Auguſta Colonia*, (*Frontinus*). At this place, or near it, Auguſtus died. Bells were firſt invented here in the 5th century; hence their Latin names NOLÆ or *Campanæ*. It retains its old name, but it hath vaſtly fallen ſhort of its ancient ſplendour. It is 13 miles ENE. of Naples. Lon. 15. E. Lat. 41. 9.

NOLACHUCKY, a river of Tenneſſee, which runs WSW. and falls into French Broad river, 26 miles above Holſtein.

NOLÆ, a name given to bells. See NOLA.

NOLANA, in botany, a genus of the monogynia order, belonging to the pentandria claſs of plants: and in the natural method ranking under the 41ſt order, *Aſperifoliæ*. The corolla is campanulated; the ſtyle ſituated betwixt the germens; the ſeeds are bilocular, and reſemble berries.

NOLAY, a town of France, in the dep. of Côte D'Or, 10½ miles SW. of Beaune, and 137 SE. of Arnay.

NOLDIUS, Chriſtian, a Daniſh divine, born in 1626. He was rector of the college at Landſcroon, and afterwards profeſſor of divinity at Copenhagen; where he died in 1673. He wrote an excellent work, entitled, *Concordantiæ Particularum Hebreo-Chaldaicarum*.

NOLI, a town of Italy, in Liguria, with a good harbour, a fort, and biſhop's ſee; 5 miles NE. of Finale, 7½ SSW. of Savona, and 30 SW. of Genoa. Lon. 8. 41. E. Lat. 44. 18. N.

(1.) * NOLI ME TANGERE. [Lat.] 1. A kind of cancerous ſwelling, Exaſperated by applications. 2. A plant.—*Noli me tangere* may be planted among your flowers, for the rarity of it. *Mortimer.*

(2, 3.) NOLI ME TANGERE, [Lat. i. e. *touch me not*.], in botany, § 1. *def.* 2. See IMPATIENS, N° 2; and MOMORDICA, N° 2.

NOLINSK, a town of Ruſſia, in the government of Viatka; 40 miles S. of Viatka. Lon. 68. 0. E. Ferro. Lat 57. 44 N.

* NOLITION. *n. ſ.* [*nolitio*, Latin.] Unwillingneſs: oppoſed to *volition*.—Proper acts of the will are, volition, *nolition*, choice, reſolution, and command, in relation to ſubordinate faculties. *Hale.*

* NOLL. *n. ſ.* [*knol*, Saxon.] A head; a noddle.—

An aſs's *noll* I fix'd on his head. *Shak.*

NOLLEN, a town of Brandenburg.

NOLLE PROSEQUI, in law, is, where a plaintiff in an action does not declare in a reaſonable time; in which caſe it is uſual for the defendant's attorney to enter a rule for the plaintiff to declare, after which a *non proſ.* may be entered. A *nolle proſequi* is eſteemed a voluntary confeſſion that the plaintiff has no cauſe of action; and therefore if a plaintiff enters his *nolle proſequi*, he ſhall be amerced; and if an informer cauſe the ſame to be entered, the defendant ſhall have coſts.

NOLLET, John Anthony, F. R. S. an eminent French philoſopher, born at Pimbre, in the dioceſe of Noyon, on the 17th Nov. 1700, of reſpectable but not wealthy parents. They ſent him to the college of Clermont in Beauvoiſis; afterwards to Beauvais, and at laſt to Paris; where he ſtudied ſcholaſtic divinity; during his probation in 1728, was made a deacon, and obtained a licence to preach. His time was now divided between theology and the ſciences. The latter, however, prevailed, and he entered into the ſtudy of phyſics with ardour, and was received into the ſociety of Arts. In 1730, he was engaged in a work conjunctly with Reaumur and Du Fay of the academy of ſciences. In 1734, he went to London, in company with Meſſrs Du Fay, Du Hamel, and Juſſieu

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Juſſieu. His merit procured him a place in the royal ſociety without ſolicitation. Two years after, he went to Holland, where he formed an intimate connection with Deſaguliers, Graveſande, and Muſchenbroeck. On his return to Paris, he reſumed the courſe of experimental phyſics which he had begun in 1735, and which he continued till 1760. Theſe courſes of phyſics ſuggeſted the idea of particular courſes in chemiſtry, anatomy, natural hiſtory, &c. In 1738, the count De Maurepas prevailed on Cardinal Fleury to eſtabliſh a public claſs for experimental phyſics; and Abbe Nollet was appointed the firſt profeſſor. In 1739, he was admitted a member of the royal academy of ſciences: and in April following, the king of Sardinia, intending to eſtabliſh a profeſſorſhip of phyſics at Turin, invited him into his dominions. Thence he travelled into Italy. In 1744, he was invited to Verſailles, to inſtruct the Dauphin in experimental philoſophy; the king and royal family were often preſent at his lectures. The qualities of his heart as well as of his underſtanding gained him the eſteem of his pupil. In April 1749, he made a tour into Italy, being ſent thither for the purpoſe of making obſervations. At Turin, Venice, and Bologna, he appeared as a deputy from the philoſophers of the reſt of Europe. In 1753 the king inſtituted a claſs of experimental philoſophy in the royal college of Navarre, and appointed Abbe Nollet profeſſor. In 1757, he appointed him preceptor in phyſics and natural hiſtory to the princes, and profeſſor of experimental philoſophy in the ſchool of Artillery at Fere. In November following, he was admitted as a penſionary of the royal academy of ſciences; and in 1761, profeſſor of experimental philoſophy at Meziers. This celebrated philoſopher, who has rendered the moſt important ſervices to phyſics by the diſcoveries with which he has enriched every branch of this ſcience, particularly electricity, died at Paris on the 25th April 1770, aged 70. He often gave aſſiſtance to his relations who were not in affluent circumſtances. His works are, 1. Several papers inſerted in the memoirs of the academy of ſciences; among which, one on the Hearing of Fiſhes is particularly valuable. 2. *Leçons de Phyſique experimentale*, 6. vols. 12mo. 3. *Recueil des Lettres ſur l'Electricite*, 3 vols. 12mo. 1753. 4. *Eſſai ſur l'Electricite des corps*, 1 vol. 12mo. 5. *Recherches ſur les cauſes particulieres des Phenomenes Electriques*, one vol. 12mo. 6. *L'Art des Experiences*, 3 vols. 12mo. with figures, 1770.

NOMADES, a name given, in antiquity, to ſeveral nations whoſe whole occupation was to feed and tend their flocks; and who had no fixed place of abode, but were conſtantly ſhifting according to the conveniences of paſturage.—The word comes from the Greek νεμω, to *feed*. The moſt celebrated Nomades were thoſe of Africa, who inhabited between Africa, properly ſo called, to the E. and Mauritania to the W. They are alſo called NUMIDÆ, or *Numidians*. Salluſt ſays, they were a colony of Perſians brought into Africa with Hercules. The Nomades of Aſia inhabited the coaſts of the Caſpian Sea. The Nomades of Scythia were the inhabitants of Little Tartary; who ſtill retain their ancient manner of living.

NOMÆ, an ancient town of Sicily. *Diod.* xi.

NOMAES, or NOMAO, a town of Portugal, in Beira; 6 miles SE. of St Joa de Peſqueera.

* NOMANCY. *n. ſ.* [*nomance*, *nomancie*, Fr. *nomen*, Lat. and μαντεια, Greek.] The art of divining the fates of perſons by the letters that form their names. *Dict.*

(1.) NO-MAN'S-LAND, a ſpace between the after part of the belfrey and the fore part of a ſhip's boat, when the ſaid boat is ſtowed upon the booms, as in a deep-waiſted veſſel. Theſe booms are laid from the fore caſtle nearly to the quarter-deck, where their after ends are uſually ſuſtained by a frame called the *gallows*, which conſiſts of two ſtrong poſts, about ſix feet high, with a croſs piece reaching from one to the other, athwart ſhips, and ſerving to ſupport the ends of thoſe booms, maſts, and yards, which lie in reſerve to ſupply the place of others carried away, &c. The place called *No-Man's land* is uſed to contain any blocks, ropes, tackles, &c. which may be neceſſary on the forecaſtle. It probably derives this name from its ſituation, as being neither on the ſtarboard nor larboard ſide of the ſhip, nor on the waiſt or forecaſtle; but, being ſituated in the middle, partakes equally of all thoſe places.

(2.) NO-MAN'S-LAND, in geography, an iſland of Maſſachuſetts, in Duke's county, SW. of Martha's Vineyard; 3 miles long, and 2 broad.

(3, 4.) NO-MAN'S-LAND, 2 Engliſh villages: 1 in Hertfordſhire, W. of Hatfield: 2. in Middleſex, between Fulham and Hammerſmith.

NOMARCHA, in antiquity, the governor or commander of a nome, or nomos. Egypt was anciently divided into ſeveral regions or quarters, called NOMES, from the Greek νομος, taken in the ſenſe of a diviſion; and the officer who had the adminiſtration of each NOME or NOMOS, from the king, was called *Nomarcha*, from νομος and αρχω, command.

* NOMBLES. *n. ſ.* The entrails of a deer.

(1.) NOMBRE DE DIOS, a town of S. America in Mexico, in the province of Darien, a little E. of Porto-Bello: formerly a famous place, but now abandoned, as unhealthy. Lon. 78. 35. W. Lat. 9. 43. N.

(2.) NOMBRE DE DIOS, a flouriſhing town of N. America, in Mexico, in the prov. of Zacatecas, abounding with rich ſilver mines. It is the moſt populous town in the province, and lies 170 miles N. of Guadalajara. Lon. 86. 36. W. Ferro. Lat. 24. 0. N.

NOMBRIL POINT, in heraldry, is the next below the feſs point, or the very centre of the eſcutcheon. Suppoſing the eſcutcheon divided into two equal parts below the feſs, the firſt of theſe diviſions is the nombril, and the lower the baſe.

NOM DE JESUS, a town and biſhop's ſee of the iſle of ZEBU, one of the Philippines.

(1.) NOME, or NAME, in algebra, denotes any quantity with a ſign prefixed or added to it, whereby it is connected with ſome other quantity, upon which the whole becomes a binomial, trinomial, or the like. See ALGEBRA.

(2.) NOME,

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(2.) NOME, or NOMOS, a division of ancient Egypt. See NOMARCHA.

(1.) * NOMENCLATOR. *n. s.* [Lat. *nomenclator.*] One who calls things or persons by their proper names.—There were a set of men in old Rome called *nomenclators*; men who could call every man by his name. *Addison.*—Are envy, pride, avarice, and ambition, such ill *nomenclators*, that they cannot furnish appellations for their owners? *Swift.*

(2.) NOMENCLATOR, in Roman antiquity, was usually a slave who attended upon persons that stood candidates for offices, and prompted or suggested to them the names of all the citizens they met, that they might court them and call them by their names, which among that people was the highest piece of civility.

(3.) NOMENCLATORS, among botanical authors, are those who have employed their labours about settling and adjusting the right names, synonymes, and etymologies of names, in regard to the whole vegetable world.

(1.) * NOMENCLATURE. *n. s.* [*nomenclature*, Fr. *nomenclatura*, Lat.] 1. The act of naming.—To say where notions cannot fitly be reconciled, that there wanteth a term or *nomenclature* for it, is but a shift of ignorance. *Bacon's Nat. History.* 2. A vocabulary; a dictionary.—The watery plantations fall not under that *nomenclature* of Adam, which unto terrestrious animals assigned a name appropriate unto their natures. *Brown.*

(2.) NOMENCLATURE (§ 1. *def.* 2.) is a catalogue of the usual words in any language, with their significations, compiled to facilitate the use of such words to those who are to learn the tongue.

(3.) NOMENCLATURE, NEW ANATOMICAL.—A work, proposing a new anatomical nomenclature, was published at Edinburgh in August 1803, by John Barclay, M. D. lecturer on anatomy in that city. Our room permits us only to give a very brief outline of his plan. "In describing the vertebral column, anatomists call the bone nearest to the head the *Atlas*, and the mass of vertebræ at the opposite extremity, the *sacrum*. In systematic connection, these occupy corresponding regions in all animals in which they are found. Dr Barclay therefore proposes the words *atlantal* and *sacral*, instead of *superior* and *inferior*. Instead of the words *antecedent* and *posterior*, which are used to express the breast and back in all animals, the terms *sternal* and *dorsal* are suggested. The words *dermal* and *central*, denoting what points to the skin and what to the centre, or *peripheral* and *central*, when speaking of an organ, are substituted for *external* and *internal*, when they signify what is superficial and deep. When they are employed to express the side or middle of a surface, suppose a plane to pass along the middle of the neck, the mediastinum, and linea alba, and to divide the neck and trunk into similar halves, from the sternum to the dorsum, and let this plane be denominated *mesion*; the words *lateral* and *mesial* will, in such a case, convey the meaning of external and internal. *Right* and *left* might still denote the lateral parts of the trunk, but *dextral* and *sinistral* are thought preferable." (*Edin. Review*, Oct. 1803, p. 105.) To avoid the ambiguity arising from the use of the words *right* and *left*, *anterior* and *posterior*, the Doctor proposes to divide the whole vascular system into two parts; to call one *systemic*, the other *pulmonic*; expressing, by the former term, all those vessels, whether arteries or veins, which convey the blood from the lungs to the different parts of the body; and by the latter, those which convey it from the system at large to the lungs. But to these terms the Reviewers, though they praise the work in general, make several objections, for which we must refer the reader to their Review.

(4.) NOMENCLATURE, NEW BOTANICAL, or LINNÆAN SYSTEM of Botany. See BOTANY, *Ind.*

(5.) NOMENCLATURE, NEW CHEMICAL, or LAVOISIERIAN SYSTEM of Chemistry. See CHEMISTRY, *Index.*

NOMENCLATURING, *part.* a new word used by Dr Barclay to express the arrangement and formation of new names.

NOMENTUM, an ancient town of Italy, belonging to the Sabines; famous for the total defeat of the Veientes and Fidenates, by the Romans under the dictator Q. Servilius Priscus, A. U. C. 312. It is now called *Lamentana.*

NOMENY, a town of France, in the dep. of Meurthe, and late duchy of Lorrain, situated on the Seille, 15 miles N. of Nancy, and 6 E. of Pont a Mousson. Lon. 6. 15. E. Lat. 48. 56. N.

(1.) * NOMINAL. *adj.* [*nominalis*, Lat.] Referring to names rather than to things; not real; titular.—

Profound in all the *nominal*,
And real ways beyond them all. *Hudibras.*

—The *nominal* definition, or derivation of the word, is not sufficient to describe the nature of it. *Pearson.*—The *nominal* essence of gold is that complex idea the word gold stands for; as a body yellow, of a certain weight, malleable, fusible, and fixed. But the real essence is the constitution of the insensible parts of that body. *Locke.*—Were these people as anxious for the doctrines essential to the church of England, as they are for the *nominal* distinction of adhering to its interests. *Addison.*

(2.) NOMINALS, *n. s.* or NOMINALISTS, a sect of school philosophers, the disciples and followers of Occam, or Ocham, an English cordelier in the 14th century. They were great dealers in words, whence they were vulgarly denominated *Word-fellers*; but had the denomination of *Nominalists*, because, in opposition to the REALISTS, they maintained, that words, and not things, were the object of dialectics. This sect had its first rise towards the end of the 11th century, and pretended to follow Porphyry and Aristotle; but it was not till Ocham's time that they bore the name. The chief of this sect, in the 11th century, was one *John*, who, on account of his logical subtilty, was called the *sophist*; and his principal disciples were Robert of Paris, Roscelin of Compiegne, and Arnoul of Laon. At the beginning, the nominals had the upper hand; but the realists, though greatly divided among themselves, were supported by men of great abilities; such as Albertus Magnus, T. Aquinas, and Duns Scotus. The nominal sect fell hereby into disrepute, till William Occam, in the 14th century, again revived it, and filled France and Germany with disputation.

Having

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Having joined the party of the Franciscan monks, who strenuously opposed John XXII. that pope and his successors left no means untried to extirpate the philosophy of the nominalists, which was deemed highly prejudicial to the interests of the church: and hence, in 1339, the university of Paris, by a public edict, solemnly condemned and prohibited the philosophy of Occam. The consequence was, that the nominalists flourished more than ever. In the 15th century, the controversy was continued with more vigour and animosity than before; and the disputants were not content with using merely the force of eloquence, but had often recourse to more hostile and dangerous weapons; and battles were the consequence of a philosophical question which neither side understood. In most places, however, the realists maintained a manifest superiority over the nominalists. While the famous Gerson, and the most eminent of his disciples, were living, the nominalists were in high esteem and credit in the university of Paris. But upon the deaths of these patrons, the face of things was much changed. In 1473, Lewis XI. by the instigation of his confessor, the Bp. of Avranches, issued out a severe edict against the doctrines of the nominalists, and ordered all their writings to be seized and secured, that they might not be read by the people; but in 1474 he mitigated this edict, and permitted some of the books of that sect to be restored. In 1481, he not only granted a full liberty to the nominalists, but also restored that sect to its former authority in the university. The nominalists were the founders of the university of Leipsic: and there are many yet abroad who pique themselves on being nominalists. The nominalists, with the Stoics, admit the formal conceptions or ideas of things, as the subject and foundation of universality; but to this they add names, which represent and signify, after the same univocal manner, and without any distinction, a great variety of single things alike in genus and species. Hence they are called *nominals*; as pretending, that to become learned, it is not enough to have just ideas of things, but it is likewise required to know the proper names of the genera and species of things, and to be able to express them clearly and precisely, without confusion or ambiguity.

NOMINALIA. See NAME, § II, 2.

NOMINALISTS. See NOMINAL, § 2.

* NOMINALLY. *adv.* [from *nominal.*] By name; with regard to a name; titulary.

* *To* NOMINATE. *v. a.* [*nomino*, Lat.] 1. To name; to mention by name.—

Suddenly to *nominate* them all,
It is impossible. *Shak. Henry* VI.

—One lady I may civilly spare to *nominate*, for her sex's sake, whom he termed the spider of the court. *Wotton.* 2. To entitle; to call.—

Aread, old father, why of late
Didst thou behight me born of English blood,
Whom all a fairy's son doen *nominate*. *Spenf.*

3. To set down; to appoint by name.—

If you repay me not on such a day, let the forfeit
Be *nominated* for an equal pound
Of your fair flesh to be cut off. *Shak.*

—Never having intended, never designed any heir in that sense, we cannot expect he should *nominate* or appoint any person to it. *Locke.*

* NOMINATION. *n. f.* [*nomination*, French; from *nominate.*] 1. The act of mentioning by name.—The forty-one immediate electors of the duke must be all of several families, and of them twenty-five at least concur to this *nomination*. *Wotton.*—Hammond was named to be of the assembly of divines; his invincible loyalty to his prince, and obedience to his mother, the church, not being so valid arguments against his *nomination*, as the repute of his learning and virtue were on the other part. *Fell.* 2. The power of appointing.—The *nomination* of persons to places, being so principal and inseparable a flower of his crown, he would reserve to himself. *Clarendon.*—In England the king has the *nomination* of an archbishop; and after *nomination*, he sends a congé d'elire to the dean and chapter, to elect the person elected by him. *Ayliffe.*

(1.) * NOMINATIVE. *n. f.* [in grammar, *nominatif*, Fr.] The case that primarily designates the name of any thing, and is called right, in opposition to the other cases called oblique.

(2.) *The* NOMINATIVE is the 1st CASE of NOUNS which are declinable. The simple position of a noun or name, *nomen*, is called the *nominative case*; yet it is not so properly a case, as the matter or ground whence the other cases are to be formed, by the several changes and inflections given to this first termination. Its chief use is to be placed before all verbs, as the subject of the proposition or affirmation.

NOMOPHYLACES, magistrates of Athens, under the Archons, resembling our sheriffs. See ATTICA, § 5.

NOMOS. See NOMARCHA, and NOME.

NOMOSTHETÆ, inferior magistrates of Athens. See ATTICA, § 5.

(1.) * NON. *adv.* [Lat.] Not. It is never used separately, but sometimes prefixed to words, with a negative power.—

Since you to *non*-regardance cast my faith,
Live you the marble-breasted tyrant still. *Shak.*

—Behold also there a lay *non*-residency of the rich, which in times of peace, too much neglecting their habitations, may seem to have provoked God to neglect them. *Holyday.*—A mere inclination to matters of duty, men reckon a willing of that thing; when they are justly charged with an actual *non*-performance of what the law requires. *South.*—For an account at large of bishop Sanderson's last judgment concerning God's concurrence or *non*-concurrence with the actions of men, I refer you to his letters. *Pierce.*—The third sort of agreement or disagreement in our ideas, which the perception of the mind is employed about, is co-existence, or *non*-existence in the same subject. *Locke.*—It is not a *non*-act, which introduces a custom, a custom being a common usage. *Ayliffe.*—In the imperial chamber this answer is not admitted, viz. I do not believe it as the matter is alleged. And the reason of this *non*-admission is its great uncertainty. *Ayliffe.*—An apparitor came to the church, and informed the parson, that he must pay the tenths to such a man; and the bishop certified the ecclesiastical court under his seal on the *non*-payment of them, that he refused to

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to pay them. *Ayliffe.*—The *non*-appearance of perſons to ſupport the united ſenſe of both houſes of parliament, can never be conſtrued as a general diffidence of being able to ſupport the charge againſt the patent and patentee. *Swift.*—This may be accounted for by the turbulence of paſſions upon the various and ſurpriſing turns of good and evil fortune, in a long evening at play; the mind being wholly taken up, and the conſequence of *non*-attention ſo fatal. *Swift.*

(2.) NON, or CAPE NON, a promontory on the W. coaſt of Africa, oppoſite to the Canary Iſlands. Lon. 10. 30. W. Lat. 9. 40. N.

(1.) NONA, a fertile iſland in the late Venetian Dalmatia, anciently called ÆNONA; 20 miles long from S. to N. and 10 broad from E. to W. It contains one city (N° 2.) and 22 villages, and is ſeparated by a narrow ſea from the county of Zara, and the iſle of Pago.

(2.) NONA, a city of Dalmatia, in the above iſland, remarkable for its ruins, which might furniſh abundant materials to gratify the curioſity of antiquaries; but they are ſo buried by repeated deva-ſtations, that rarely any veſtige of them appears. The kings of the Croat Slavi had anciently their reſidence in it. It has a harbour, which formerly was capable of receiving large ſhips; but is now become a fetid pool, by a little muddy river that falls into it, after a courſe of about ſix miles through the rich abandoned fields of that diſtrict. The ancient inhabitants turned this water into another channel, and made it run through the valley of Draſnich into the ſea; and the remains of the bank raiſed by them for that purpoſe are ſtill to be ſeen. This city has a cathedral and four churches, and is a biſhop's ſee. It is connected with the continent by two bridges, though the channel is fordable. The natives cultivate tobacco. Nona is 7 miles NE. of Zara. Lon. 16. 10. E. Lat. 44. 35. N.

NONÆ, the Nones. See NONES.

NONACRIS, a town and mountain of Arcadia; whence EVANDER is ſometimes ſtyled *Nonacrius heros. Ovid. Met.* viii.

(1.) * NONAGE. *n. ſ.* [*non* and *age.*] Minority; time of life before legal maturity.—

In him there is a hope of government,
Which in his *nonage*, counſel under him,
And in his full and ripen'd years, himſelf
Shall govern well. *Shak. Richard* III.

Love knows no *nonage*. *Craſhaw.*

—We have a miſtaken apprehenſion of antiquity, calling that ſo, which in truth is the world's *nonage. Glanville.*—'Tis neceſſary that men ſhould firſt be out of their *nonage*, before they can attain to an actual uſe of this principle. *Wilkins.*—Thoſe charters were not avoidable for the king's *nonage. Hale.*—After Chaucer there was a Spenſer, a Harrington, a Fairfax, before Waller and Denham were in being; and our numbers were in their *nonage* 'till theſe laſt appeared. *Dryden.*—

In their tender *nonage*, while they ſpread
Their ſpringing leaves, and lift their infant head,
Indulge their childhood. *Dryden.*

(2.) NONAGE, in law, generally ſignifies all the time a perſon continues under the age of 21; but, in a ſpecial ſenſe, it is all the time that a perſon is under the age of 14.

NONAGESIMAL, *adj.* or NONAGESIMAL DEGREE, called alſo the *Mid Heaven*, is the 90th deg. or higheſt point of the ECLIPTIC, reckoned from its interſection with the horizon at any time; and its altitude is equal to the angle that the ecliptic makes with the horizon at their interſection, or equal to the diſtance of the zenith from the pole of the ecliptic. It is much uſed in the calculation of ſolar eclipſes. See ASTRONOMY, *Index.*

NONAGON, *n. ſ.* a figure having 9 ſides and angles. In a regular nonagon, or that whoſe angles and ſides are all equal, if each ſide be 1, its area will be $6\cdot1818242=\frac{9}{4}$ of the tangent of 70°, to the radius 1.

NONANCOURT, a town of France, in the dep. of Eure; 7½ miles W. of Dreux, and 12 E. of Verneuil.

NONANT, a town of France, in the department of the Orne, 10 miles N. of Argentan.

NONANTOLA, a town of Italy, in the dep. of Panaro, and diſtrict, late duchy, of Modena; 10 miles NE. of Modena.

NONASPE, a town of Spain, in Arragon.

NON-CAPE, an erroneous ſpelling in ſeveral Gazetteers, and inverſion of the name Cape Non. See NON, N° 2.

* NONCE. *n. ſ.* [The original of this word is uncertain: *Skinner* imagines it to come from *one* or *once*; or from *nutz*, German, *need* or *uſe*: *Junius* derives it leſs probably from *noiance*; to do for the *nonce* being, according to him, to do it *merely for miſchief.*] Purpoſe; intent; deſign. Not now in uſe.—

I ſaw a wolf
Nurſing two whelps; I ſaw her little ones
In wanton dalliance the teat to crave,
While ſhe her neck wreath'd from them for the *nonce*. *Spenſer.*

—They uſed at firſt to fume the fiſh in a houſe built for the *nonce. Carew.*—

When in your motion you are hot,
And that he calls for drink, I'll have prepar'd him
A chalice for the *nonce*. *Shak. Hamlet.*

And they lead men for the *nonce*,
That turn round like grindle-ſtones. *Jonſon.*

A voider for the *nonce*,
I wrong the devil ſhould I pick their bones.
Cleaveland.

Coming ten times for the *nonce*,
I never yet could ſee it flow but once. *Cotton.*

NONCELLO, a navigable river of Maritime Auſtria, in Treviſano, which falls into the Livenza.

NON COMPOS MENTIS, [Lat.] not ſound in judgment; a term in law applied to inſane perſons.

(1.) * NONCONFORMIST. *n. ſ.* [*non* and *conformiſt.*] One who refuſes to join in the eſtabliſhed worſhip.—On his death-bed he declared himſelf a *non-conformiſt*, and had a fanatic preacher to be his ſpiritual guide. *Swift.*

(2.) NONCONFORMISTS, in England (ſays Blackſtone), are of two ſorts. Firſt, ſuch as abſent themſelves from divine worſhip in the eſtabliſhed church through irreligion, and attend the ſervice of no other perſuaſion. Theſe, by the ſtat. 1 Eliz. c. 2. 23 Eliz. c. 1. and 3 Jac. I. c. 4. forfeit one ſhilling to the poor every Lord's-day they ſo abſent

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ſent themſelves, and 20l. to the king if they continue ſuch default for a month together. And if they keep any inmate thus irregiouſly diſpoſed in their houſes, they forfeit 10l. *per* month. The 2d ſpecies are thoſe who offend through a miſtaken or perverſe zeal. Such were eſteemed, by the Engliſh laws enacted ſince the Reformation, to be Papiſts and Proteſtant diſſenters: both of whom were ſuppoſed to be equally ſchiſmatics, in not communicating with the national church; with this difference, that the Papiſts divided from it upon material, though erroneous reaſons; but many of the diſſenters upon matters of indifference. "Yet certainly (ſays Sir William Blackſtone) our anceſtors were miſtaken in their plans of compulſion and intolerance. The ſin of ſchiſm as ſuch, is by no means the object of temporal coercion and puniſhment. The civil magiſtrate has nothing to do with it; unleſs their tenets and practice are ſuch as threaten ruin or diſturbance to the ſtate. He is bound indeed to protect the eſtabliſhed church; and if this can be better effected by admitting none but its genuine members to offices of truſt and emolument, he is certainly at liberty ſo to do; the diſpoſal of offices being matter of favour and diſcretion. But this point being once ſecured, all perſecution for diverſity of opinions, however ridiculous or abſurd, is contrary to every principle of ſound policy and civil freedom. The names and ſubordination of the clergy, the poſture of devotion, the materials and colour of the miniſter's garment, the joining in a known or unknown form of prayer, and other matters of the ſame kind, muſt be left to the option of every man's private judgment.

(3.) NONCONFORMISTS, LAWS RESPECTING PROTESTANT. With regard therefore to *Proteſtant diſſenters*, although the experience of their turbulent diſpoſition in former times occaſioned ſeveral diſabilities and reſtrictions (which I ſhall not undertake to juſtify) to be laid upon them, yet at length the legiſlature, with a true ſpirit of magnanimity, extended that indulgence to theſe ſectaries, which they themſelves, when in power, had held to be countenancing ſchiſm, and denied to the church of England. The penalties are conditionally ſuſpended by the ſtatute 1 W. & M. ſt. 1. c. 18. "for exempting their Majeſties proteſtant ſubjects, diſſenting from the church of England, from the penalties of certain laws," commonly called the *toleration act*; which declares, that neither the laws above mentioned, nor the ſtatutes 1 Eliz. c. 2. § 14. 3 Jac. I. c. 4. & 5. nor any other penal laws made againſt Popiſh recuſants, (except the teſt-acts) ſhall extend to any diſſenters, other than Papiſts and ſuch as deny the Trinity: provided, 1. That they take the oaths of allegiance and ſupremacy, (or make a ſimilar affirmation, being Quakers), and ſubſcribe the declaration againſt Popery. 2. That they repair to ſome congregation certified to and regiſtered in the court of the archbiſhop or deacon, or at the county ſeſſions. 3. That the doors of ſuch meeting-houſe ſhall be unlocked, unbarred, and unbolted; in default of which, the perſons meeting there are ſtill liable to all the penalties of the former acts. Diſſenting teachers to be exempted from the penalties of the ſtatutes 13 and 14 Car. II. c. 1. are alſo to ſubſcribe the articles of religion mentioned in ſtat. 13 Eliz. c. 12. (viz. thoſe which only concern the confeſſion of the true Chriſtian faith, and the doctrine of the ſacraments), with an expreſs exception of thoſe relating to the government and powers of the church, and to infant baptiſm. And by ſtatute 10 Ann. c. 2. this toleration is ratified and confirmed; and it is declared, that the ſaid act ſhall at all times be inviolably obſerved for the exempting ſuch Proteſtant diſſenters, as are thereby intended, from the pains and penalties therein mentioned. Thus, though nonconformity is by no means univerſally abrogated, it is ſuſpended, and ceaſes to exiſt with regard to theſe Proteſtant diſſenters, during their compliance with the conditions impoſed by the act of toleration: and, under theſe conditions, all perſons, who will approve themſelves no Papiſts or oppugners of the Trinity, are left at full liberty to act as their conſciences ſhall direct them in the matter of religious worſhip. And if any perſon ſhall wilfully, maliciouſly, or contemptuouſly diſturb any congregation aſſembled in any church or permitted meeting houſe, or ſhall miſuſe any preacher or teacher there, he ſhall (by virtue of the ſame ſtatute) be bound over to the ſeſſions of the peace, and forfeit 20l. But by ſtat. 5. Geo. I. c. 4. no mayor or principal magiſtrate muſt appear at any diſſenting meeting with the enſigns of his office, on pain of diſability to hold that or any other office: the legiſlature judging it a matter of propriety, that a mode of worſhip, ſet up in oppoſition to the national, when allowed to be exerciſed in peace, ſhould be exerciſed alſo with decency, gratitude, and humility. Neither doth the act of toleration extend to enervate thoſe clauſes of the ſtatutes 13 and 14 Car. II. c. 4. and 17 Car. II. c. 2. which prohibit (upon pain of fine and impriſonment) all perſons from teaching ſchools, unleſs they be licenſed by the ordinary, and ſubſcribe a declaration of conformity to the liturgy of the church, and reverently frequent divine ſervice *eſtabliſhed* by the laws of this kingdom.

(4.) NONCONFORMISTS, STATUTES AGAINST POPISH. As to *Papiſts*, what has been ſaid of the Proteſtant diſſenters would hold equally ſtrong for a general toleration of them; provided their ſeparation were founded only upon difference of opinion in religion, and their principles did not alſo extend to a ſubverſion of the civil government. If once they could be brought to renounce the ſupremacy of the Pope, they might quietly enjoy their 7 ſacraments; their purgatory, and auricular confeſſion; their worſhip of relics and images; nay, even their tranſubſtantiation. But while they acknowledge a foreign power, ſuperior to the ſovereignty of the kingdom, they cannot complain if the laws of that kingdom will not treat them upon the footing of good ſubjects. The following are the laws that have been enacted againſt the Papiſts; who may be divided into three claſſes, perſons profeſſing Popery, Popiſh recuſants convict, and Popiſh prieſts. 1. Perſons profeſſing the Popiſh religion, beſides the former penalties for not frequenting their pariſh-church, are diſabled from taking any lands, either by deſcent or purchaſe, after 18 years of age, until they renounce their errors; they muſt, at the age of 21, regiſter

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regiſter their eſtates before acquired, and all future conveyances and wills relating to them; they are incapable of preſenting to any advowſon, or granting to any other perſon any avoidance of the ſame; they may not keep or teach any ſchool, under pain of perpetual impriſonment; and, if they willingly ſay or hear maſs, they forfeit the one 200, the other 100 merks, and each ſhall ſuffer a year's impriſonment. Thus much for perſons who, from the misfortune of family prejudices, or otherwiſe, have conceived an unhappy attachment to the Romiſh church from their infancy, and publicly profeſs its errors. But if any evil induſtry is uſed to rivet theſe errors upon them; if any perſon ſends another abroad to be educated in the Popiſh religion, or to reſide in any religious houſe abroad for that purpoſe, or contributes to their maintenance when there; both the ſender, the ſent, and the contributor, are diſabled to ſue in law or equity, to be executor or adminiſtrator to any perſon, to take any legacy or deed of gift, and to bear any office in the realm; and ſhall forfeit all their goods and chattels, and likewiſe all their real eſtate for life. And where theſe errors are alſo aggravated by apoſtacy or perverſion; where a perſon is reconciled to the ſee of Rome, or procures others to be reconciled, the offence amounts to high treaſon. 2. Popiſh recuſants, convicted in a court of law of not attending the ſervice of the church of England, are ſubject to the following diſabilities, penalties, and forfeitures, over and above thoſe before-mentioned. They are conſidered as perſons excommunicated: they can hold no office or employment; they muſt not keep arms in their houſes, but the ſame may be ſeized by the juſtice of the peace: they may not come within 10 miles of London, on pain of 100l.: they can bring no action at law or ſuit in equity; they are not permitted to travel above 5 miles from home, unleſs by licence, upon pain of forfeiting all their goods; and they may not come to court, under pain of 100l. No marriage or burial of ſuch recuſant, or baptiſm of his child, ſhall be had otherwiſe than by the miniſters of the church of England, under other ſevere penalties. A married woman ſhall forfeit two thirds of her dower or jointure, may not be executrix or adminiſtratix to her huſband, nor have any part of his goods; and during the coverture may be kept in priſon, until her huſband redeems her at the rate of 10l. a month, or the third part of all his lands. And laſtly, as a feme couvert recuſant may be impriſoned, ſo all others muſt, within three months after conviction, either ſubmit or renounce their errors, or if required ſo to do by four juſtices, muſt abjure and renounce the realm: and if they do not depart, or if they return without the king's licence, they ſhall be guilty of felony, and ſuffer death as felons without benefit of clergy. There is alſo an inferior ſpecies of recuſancy, (refuſing to make the declaration againſt Popery enjoined by ſtatute 30 Car. II. ſt. 2. when tendered by the proper magiſtrate); which, if the party reſides within ten miles of London, makes him an abſolute recuſant convict; or, if at a greater diſtance, ſuſpends him from having any ſeat in parliament, keeping arms in his houſe, or any horſe above the value of 5l. 3. Popiſh prieſts are ſtill in a more dangerous condition. By ſtatute 11 and 12 W. III. c. 4. Popiſh prieſts, or biſhops, celebrating maſs or exerciſing any part of their functions in England, except in the houſes of ambaſſadors, are liable to perpetual impriſonment. And by ſtat. 27. Eliz. c. 2. any Popiſh prieſt, born in the dominions of the crown of England, who ſhall come over hither from beyond ſea, (unleſs driven by ſtreſs of weather, and tarrying only a reaſonable time), or ſhall be in England three days without conforming and taking the oaths, is guilty of high treaſon: and all perſons harbouring him are guilty of felony without the benefit of clergy. This is a ſhort ſummary of the laws againſt the Papiſts; of which Monteſquieu obſerves, that they are ſo rigorous, though not profeſſedly of the ſanguinary kind, that they do all the hurt that can poſſibly be done in cold blood. But in anſwer to this, theſe laws are ſeldom exerted to their utmoſt rigour: and indeed, if they were, it would be very difficult to excuſe them. For they are rather to be accounted for from the urgency of the times which produced them, than to be approved as a ſtanding ſyſtem of law. The reſtleſs machinations of the Jeſuits during the reign of Elizabeth, the turbulence and uneaſineſs of the Papiſts under the new religious eſtabliſhment, and the boldneſs of their hopes and wiſhes for the ſucceſſion of the queen of Scots, obliged the parliament to counteract ſo dangerous a ſpirit by laws of great, and then perhaps neceſſary, ſeverity. The powder treaſon, in the ſucceeding reign, ſtruck a panic into James I. which operated in different ways: it occaſioned the enacting of new laws againſt the Papiſts; but deterred him from putting them in execution. The intrigues of Q. Henrietta in the reign of Charles I. the proſpect of a Popiſh ſucceſſor in that of Charles II. the aſſaſſination plot in the reign of William III. and the avowed claim of a Popiſh pretender to the crown in ſubſequent reigns, will account for the extenſion of theſe penalties at theſe ſeveral periods of our hiſtory." But now that all fears of a pretender have vaniſhed, and the power and influence of the pope has become feeble, ridiculous, and deſpicable, in almoſt every kingdom of Europe; and as in fact the Britiſh Catholics ſolemnly diſclaim the dangerous principles aſcribed to them; the Britiſh legiſlature, giving way to that liberality of ſentiment becoming Proteſtants, have repealed the moſt rigorous of the above edicts, *viz.* The puniſhment of Popiſh prieſts or Jeſuits who ſhould be found to teach or officiate in the ſervices of that church; which acts were felony in foreigners and high treaſon in the natives of this kingdom: —The forfeitures of Popiſh heirs, who had received their education abroad; and whoſe eſtates went to the next proteſtant heir:—The power given to the ſon, or other relation, being a Proteſtant, to take poſſeſſion of the father's, or other relation's eſtate, during the life of the real proprietor:—And the debarring Papiſts from the power of acquiring any legal property by purchaſe.—In propoſing the repeal of theſe penalties, it was obſerved, That, beſides that ſome of them had now ceaſed to be neceſſary, others were at all times a diſgrace to humanity. The impriſonment of a Popiſh prieſt for life, only for officiating in the

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ſervice of his religion, was horrible in its nature: And although the mildneſs of government had hitherto ſoftened the rigour of the law in the practice, it was to be remembered that the Roman Catholic prieſts conſtantly lay at the mercy of the baſeſt and moſt abandoned of mankind.—Of common informers; for on the evidence of any of theſe wretches, the magiſterial and judicial powers were of neceſſity bound to enforce all the ſhameful penalties of the act. Others of theſe penalties held out the moſt powerful temptations for the commiſſion of acts of depravity, at the very thought of which our nature recoils with horror: They ſeemed calculated to looſen all the bands of ſociety; to diſſolve all civil, moral, and religious obligations and duties, to poiſon the ſources of domeſtic felicity, and to annihilate every principle of honour. The encouragement given to children to lay their hands upon the eſtates of their parents, and the reſtriction which debars any man from the honeſt acquiſition of property, need only to be mentioned to excite indignation in an enlightened age. In order the better to ſecure the Engliſh eſtabliſhed church againſt perils from nonconformiſts of all denominations, infidels, Turks, Jews, heretics, Papiſts, and ſectaries, there are, however, two bulwarks erected; called the *corporation* and *teſt acts:* By the former of which, no perſon can be legally elected to any office relating to the government of any city or corporation, unleſs, within a twelvemonth before, he has received the ſacrament of the Lord's ſupper according to the rites of the church of England; and he is alſo enjoined to take the oaths of allegiance and ſupremacy at the ſame time that he takes the oath of office: or, in default of either of theſe requiſites, ſuch election ſhall be void. The other, called the TEST ACT, directs all officers civil and military to take the oaths and make the declaration againſt tranſubſtantiation, in any of the king's courts at Weſtminſter, or at the quarter ſeſſions, within ſix kalendar months after their admiſſion; and alſo within the ſame time to receive the ſacrament of the Lord's Supper, according to the uſage of the church of England, in ſome public church immediately after divine ſervice and ſermon, and to deliver into court a certificate thereof ſigned by the miniſter and a church-warden, and alſo to prove the ſame by two credible witneſſes; upon forfeiture of 500l. and diſability to hold the ſaid office. And of much the ſame nature with theſe is the ſtatute 7 Jac. I. c. 2. which permits no perſons to be naturaliſed or reſtored in blood, but ſuch as undergo a like teſt: which teſt having been removed in 1753, in favour of the Jews, was the next ſeſſion of parliament reſtored again with ſome precipitation. But theſe relics of perſecution ought alſo to be aboliſhed. The church of England has no need of ſuch ſupports, and the moſt deciſive arguments, have been often urged in Parliament for their total abolition, though hitherto without effect. Theſe laws have been conſiderably mitigated of late years, and a loud demand is at preſent (1811) made for the the total abolition of all reſtraints upon the Iriſh Papiſts. See ENGLAND, § 128.

* NONCONFORMITY. *n. ſ.* [*non* and *conformity.*] 1. Refuſal of compliance.—The will of our Maker, whether diſcovered by reaſon or revelation, carries the higheſt authority with it; a conformity or *nonconformity* to it determines their actions to be morally good or evil. *Watts.* 2. Refuſal to join in the eſtabliſhed religion.—Since the liturgy, rites, and ceremonies of our church, are ſtruck at, upon a plea of conſcience, it will concern us to examine the force of this plea, which our adverſaries are ſtill ſetting up as the grand pillar and buttreſs of *nonconformity. South.*—The lady will plead the toleration which allows her *nonconformity* in this particular. *Addiſon.*

NONDORF, a town of Germany, in Auſtria, 6 miles NW. of Sonneberg.

(1.) * NONE. *adj.* [*ne one, nan, ane ne,* Saxon.] 1. Not one: uſed both of perſons and things.—Ye ſhall flee when *none* purſueth you. *Lev.* xxvi. 17.

That killing power is *none* of thine,
I gave it to thy voice and eyes. *Carew.*

—That fowl, which is *none* of the lighteſt, can eaſily move itſelf up and down in the air without ſtirring its wings. *Wilkins.*—Another, which is *none* of the leaſt advantages of hope, is its great efficacy in preſerving us from ſetting too high a value on preſent enjoyments, *Addiſon.* 2. Not any: *no* was in this ſenſe uſed anciently before a conſonant, and *none* before a vowel. Six days ſhall ye gather it, but on the ſabbath there ſhall be *none. Exodus.* xvi. 26.—Thy life ſhall hang in doubt, and thou ſhalt have *none* aſſurance of this life. *Deut.* xxviii. 66.—Before the deluge, the air was calm; *none* of thoſe tumultuary motions of vapours, which the mountains and winds cauſe in ours. *Burnet.*—The moſt glaring and notorious paſſages, are *none* of the fineſt. *Felton on the Claſſics.* 3. Not other.—This is *none* other but the houſe of God, and the gate of heaven. *Gen.* xxviii. 7. 4. *None of* ſometimes ſignifies only emphatically *nothing.*—Iſrael would *none of* me. *Pſ.* lxxxi. 11. 5. *None* is always uſed when it relates to a ſubſtantive going before; as, we ſhall have *no* wine, we ſhall have *none.* 6. *None* ſeems originally to have ſignified according to its derivation, *not one,* and therefore to have had no plural, but it is now uſed plurally.—

Terms of peace were *none*
Vouchſaf'd. *Milton.*

In at this gate *none* paſs
The vigilance here plac'd, but ſuch as come
Well known from Heav'n. *Milton.*

Nor think though men were *none*
That heav'n would want ſpectators. *Milton.*

(2.) NONE, in geography, a river of France, in the dep. of the Po, and late Piedmonteſe, which runs into the Torto (or *Rio-Torto,* as ſome abſurdly ſtyle it) at the town of None.

(3.) NONE, a town of France, in the department of the Po, and late Piedmonteſe, at the conflux of the None and the Torto; 7 miles SSW. of Turin, and 8 NW. of Carmagnola.

* NONENTITY. *n. ſ.* [*non* and *entity.*] 1. Nonexiſtence; the negation of being.—Nothing can make itſelf, or, nothing cannot bring its noſelf out of *nonentity* into ſomething. *Bently.* 2. A thing not exiſting.—There was no ſuch thing as rendering evil, when evil was truly a *nonentity. South.*—We have heard, and think it pity that your

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your inquisitive genius should not be better employed than in looking after that theological *nonentity*. *Arbuthnot*.

NONERSTORF, a town of Austria.

NONES, NONÆ, in the Roman kalendar, the fifth day of the months January, February, April, June, August, September, November, and December; and the seventh of March, May, July, and October. March, May, July, and October, had six days in their nones; because these alone, in the ancient constitution of the year by Numa had 31 days a-piece; the rest having only 29, and February 30: but when Cæsar reformed the year, and made other months contain 31 days, he did not allot them six days of nones.

NONE-SO-PRETTY. See SAXIFRAGA, N° 3.

(1.) NONESUCH, a sea port of Antigua.

(2.) NONESUCH, in botany. See LYCHNIS.

* NONEXISTENCE. *n. s.* [*non* and *existence*.] 1. Inexistence; negation of being. 2. The thing not existing.—A method of many writers, which depreciates the esteem of miracles, is, to salve not only real verities, but also *nonexistences*. *Brown*.

NONIDI, the 9th day of the decade in the new French calendar. See CALENDAR, § 3.

* NONJURING. *adj.* [*non* and *juror*, Latin.] Belonging to those who will not swear allegiance to the Hanoverian family.—This objection was offered me by a very pious, learned, and worthy gentleman of the *nonjuring* party. *Swift*.

(1.) * NONJUROR. *n. s.* [from *non* and *juror*.] One who, conceiving James II. unjustly deposed, refuses to swear allegiance to those who have succeeded him.

(2.) NONJURORS, those who refused to take the oaths to government, and who were in consequence under certain incapacities, and liable to certain severe penalties. There are very few nonjurors now in the kingdom; and all penalties have been abolished respecting such both in Scotland and England. The members of the Episcopal church in Scotland were long denominated Nonjurors; but upon the death of prince Charles Stuart, in 1788, their bishops, and the great majority of the people, avowed their attachment to the present Royal family, and resolved to pray for his Majesty king George III. so that the only remaining ground of their difference from the establishment is on account of ecclesiastical principles. We believe there are no longer any nonjurors in any part of Scotland. There are certainly no longer any clergymen of that description.

(1.) NONIUS, Marcellus, a grammarian and peripatetic philosopher, born at Trivoli, who wrote a treatise, intitled *De proprietate sermonum*. This author is valuable for giving fragments of ancient authors nowhere else to be found. His treatise was printed at Paris in 1614, with notes.

(2.) NONIUS, Peter, in Spanish NUNEZ, a learned Portuguese, and one of the ablest mathematicians of the 16th century, was born at Alcacer. He was preceptor to prince Henry, king Emmanuel's son, and taught the mathematics in the university of Coimbra. He published the following works, by which he gained great reputation: 1. *De arte navigandi*. 2. *Annotationes in theoricas planetarum Purbachii*. 3. A treatise *De Crepusculis*. 4. A treatise on Algebra. It is observed in Furetiere's dictionary, that Peter Nonius, in 1530, first invented the angles of 45° made in every meridian, and that he called them *rhumbs* in his language, and calculated them by spherical triangles. Nonius died in 1577, aged 80.

(3.) NONIUS, the name which was not many years ago given to the common device for subdividing the arcs of quadrants and other astronomical instruments, from the persuasion that it was invented by NONIUS or NUNEZ. (See NONIUS, N° 2.) But the generality of astronomers of the present age, transferring the honour of the invention from *Nunez* to *Peter Vernier*, a native of Franche Comte, have called this method of division by his name. (See VERNIER.) Mr Adams, however, in his *Commercial and Geographical Essays*, has lately shown that Clevius the Jesuit may dispute the invention with them both. The truth seems to be, that Nunez started the idea, Clevius improved it, and Vernier carried it to its present state of perfection. The method of Nunez, described in his treatise *De Crepusculis*, printed at Lisbon 1542, consists in describing within the same quadrant 45 concentric circles, dividing the outermost into 90 equal parts, the next within into 89, the next into 88, &c. till the innermost was divided into 46 only. On a quadrant thus divided the plumb line or index must cross one or other of the circles very near a point of division; whence, by computation the degrees and minutes of the arch might be easily ascertained. This method is also described by Nunez in his treatise *De arte atque ratione navigandi*, where he would fain persuade himself, that it was not unknown to Ptolemy. But as the degrees are thus divided very unequally, and as it is very difficult to attain exactness in the division, especially when the numbers into which the arches are to be divided are incompositе (of which there are no less than 9), the method of diagonals, first published by Thomas Digges, Esq. in a treatise entitled *Alæ seu scalæ mathematicæ*, printed at London in 1573, and said to be invented by one Richard Chenseler, was substituted in its room. Nonius's method was, however, improved at different times and by different persons; and it must be acknowledged, that if Vernier saw either the original or any of the improvements (and he is believed to have seen them all), his merit is only that of having applied to an useful practical purpose the speculative invention of another person.

(4.) NONIUS. See NONNIUS.

(1.) * NONNATURALS. *n. s.* [*non naturalia*, Latin.] Physicians reckon these to be six, viz. air, meat and drink, sleep and watching, motion and rest, retention and excretion, and the passions of the mind.—The six *nonnaturals* are such as, neither naturally constitutive, nor merely destructive, do preserve or destroy according unto circumstances. *Brown*.

(2.) NON-NATURALS, in medicine, are so called, by a strange perversion of language, because by their abuse they become the causes of diseases; although all of them (See § 1.) instead of being *non-naturals*, are so very *natural* to human life, that it cannot exist without them. See MEDICINE, *Index*.

NONNETTE, a town of France, in the dep. of

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of Puy de Dome; 4½ miles SSE. of Iſſoire and 12 NNW. of Brioude.

(1.) NONNIUS, or NONIUS Lewis, a learned phyſician of Antwerp in the 17th century, who wrote ſeveral works which are eſteemed; the principal are, 1. An excellent treatiſe entitled *Ichthyophagia, ſive de Piſcium eſu.* 2. *Hiſpania*; uſeful for underſtanding the ancient geography of Spain. 3. A commentary on the medals of Greece, and thoſe of Julius Cæſar, Auguſtus, and Tiberius, in folio; it contains Goltzius's *Two Words* on the ſame ſubject. 4. A commentary on Goltzius's account of Greece, the iſlands, &c. 5. Poems, &c.

(2—4.) NONNIUS. See NONIUS, N° 1, 2, 3.

(5.) NONNIUS, or NONNUS, } a Greek poet of the 5th century, and native of Panopolis in Egypt, who wrote a heroic poem in 48 books, entitled *Dionyſiacorum*, and a paraphraſe in verſe of St John's Goſpel, which may ſerve as a commentary upon it.

NON OBSTANTE, (*notwithſtanding*,) a clauſe frequent in ſtatutes and letters patent, importing a licence from the king to do a thing, which at common law might be lawfully done, but being reſtrained by act of parliament cannot be done without ſuch licence.

(1.) * NONPAREIL. *n. ſ.* [*non* and *pareil*. Fr.] 1. Excellence unequalled.—

My lord and maſter loves you: O ſuch love
Could be but recompens'd, tho' you were crown'd

The *nonpareil* of beauty. *Shak. Twelfth Night.* 2. A kind of apple. 3. Printers letter of a ſmall ſize, on which ſmall Bibles and Common Prayers are printed.

(2.) NONPAREIL, in botany, § 1. *def.* 2. See PYRUS, N° 4.

* NONPLUS. *n. ſ.* [*non* and *plus*, Lat.] Puzzle; inability to ſay or do more. A low word.—Let it ſeem never ſo ſtrange and impoſſible, the *nonplus* of my reaſon will yield a fairer opportunity to my faith. *South.*—One or two rules, in moſt men have governed all their thoughts: take theſe from them and their underſtanding is perfectly at a *nonplus*. *Locke.*—Such an artiſt did not begin the matter at a venture, and when put to a *nonplus*, pauſe and heſitate which way he ſhould proceed. *Bentley.*

* *To* NONPLUS. *v. a.* [from the noun.] To confound; to puzzle; to put to a ſtand; to ſtop. —Nor is the compoſition of our own bodies the only wonder; we are as much *nonpluſt* by the moſt contemptible worm and plant. *Glanville's Sceptſis.*

His parts were ſo accompliſht,
That right or wrong he ne'er was *nonpluſt*. *Hud.*

—That ſin that is a pitch beyond all thoſe, muſt needs be ſuch an one as muſt *nonplus* the devil himſelf to proceed farther. *South.*—What, you are confounded, and ſtand mute?—Somewhat *nonpluſt* to hear you deny your name. *Dryden.*—Tom has been eloquent for half an hour together, when he has been *nonpluſſed* by Mr Dry's deſiring him to tell what it was that he endeavoured to prove. *Spectator.*

NON PROS. See NOLLE PROSEQUI.

* NONRESIDENCE. *n. ſ.* [*non* and *reſidence*.] Failure of reſidence.—If the character of perſons choſen into the church had been regarded, there would be fewer complaints of *nonreſidence*. *Swift.*

* NONRESIDENT. *n. ſ.* [*non* and *reſident*.] One who neglects to live at the proper place.—As to nonreſidents, there are not ten clergymen in the kingdom who can be termed *nonreſidents*. *Swift.*

* NONRESISTANCE. *n. ſ.* [*non* and *reſiſtance*.] The principle of not oppoſing the king; ready obedience to a ſuperior.

* NONSENSE. *n. ſ.* [*non* and *ſenſe*.] 1. Unmeaning or ungrammatical language.—

'Till underſtood, all tales,
Like *nonſenſe*, are not true nor falſe. *Hud.*

—Many copies diſperſed gathering new faults, I ſaw more *nonſenſe* than I could have crammed into it. *Dryden.*—This *nonſenſe* got into all the following editions by a miſtake of the ſtage editors. *Pope on Shak.* 2. Trifles; things of no importance. A low word.—

What's the world to him?
'Tis *nonſenſe* all. *Thomſon.*

* NONSENSICAL. *adj.* [from *nonſenſe*.] Unmeaning; fooliſh.—They had produced many other inept combinations, or aggregate forms of particular things, and *nonſenſical* ſyſtems of the whole. *Ray on the Creation.*

* NONSENSICALNESS. *n. ſ.* [from *nonſenſical*.] Ungrammatical jargon; fooliſh abſurdity.

* NONSOLVENT. *adj.* [*non* and *ſolvent*.] Who cannot pay his debts.

* NONSOLUTION. *n. ſ.* [*non* and *ſolution*.] Failure of ſolution.—Athenæus inſtances ænigmatical propoſitions, and the forfeitures and rewards upon their ſolution and *nonſolution*. *Broome.*

* NONSPARING. *adj.* [*non* and *ſparing*.] Mercileſs; all deſtroying.—

Is't I expoſe
Thoſe tender limbs of thine to the event
Of the *nonſparing* war? *Shak. All's well.*

(1.) NONSUCH, in botany. See LYCHNIS.

(2.) NONSUCH, in geography, one of the BERMUDA Iſlands.

(3.) NONSUCH. See NONESUCH.

(1.) * *To* NONSUIT. *v. a.* [*non* and *ſuit*.] To deprive of the benefit of a legal proceſs for ſome failure in the management.—The addreſſes of both houſes of parliament, the council, and the declarations of moſt counties and corporations, are laid aſide as of no weight, and the whole kingdom of Ireland *nonſuited*, in default of appearance. *Swift.*

(2.) *To* NON-SUIT ſignifies the dropping of a ſuit or action, or a renouncing thereof by the plaintiff or defendant; which happens moſt commonly upon the diſcovery of ſome error in the plaintiff's proceedings when the cauſe is ſo far proceeded in, that the jury is ready at the bar to deliver in their verdict.

NONTRON, a town of France, and capital of a diſtrict, in the dep. of Dordogne; 21 miles N. of Perigueux, and 10 WSW. of Limoges. Lon. 18. 19. E. of Ferro. Lat. 45. 32.

NONUPLA, in the Italian muſic, denotes a quick time, peculiar to jigs. This ſpecies of time is otherwiſe called *the meaſure of nine times*, which requires two falls of the hand, and one riſe. There are three ſorts of nonupla. 1. *Nonupla di ſemi-minime*, or *dupla ſeſquiquarta*, thus marked 9/4. where nine crotchets are to be in the bar, of which four make

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make a ſemi-breve in common time, *i. e.* in the down ſtroke ſix, and but three up: it is uſually beat *adagio*. 2. *Nonupla di crome*, or *ſeſqui ottava*, marked thus $\frac{9}{8}$, wherein nine quavers make a bar inſtead of eight in common time, *i. e.* ſix down and three up: it is beat *preſto*. 3. *Nonupla di ſemi-crome* or *ſuper ſetti partiente nona*, thus diſtinguiſhed $\frac{9}{16}$, in which nine ſemi-quavers are contained in a bar, whereof 16 are required in common time, ſix down, and three up: it is ordinarily beat *preſtiſſimo*. There are alſo two other ſpecies of nonupla.

NONZA, a town of France, in the iſland and dep. of Corſica; 8 miles NW. of Baſtia.

* NOODLE. *n. ſ.* [from *noddle* or *noddy*.] A fool; a ſimpleton.

NOODT, Gerard, an eminent civilian, born at Nimeguen in 1647, where he was choſen profeſſor of law in 1671. He was afterwards appointed profeſſor at Franequer; and Utrecht in 1684; but in 1686 became rector of the univerſity of Leyden. He publiſhed a collection of his works on law, in 1713, 4to, and died in 1725.

* NOOK. *n. ſ.* [from *een hoeck*, German.] A corner; a covert made by an angle or interſection.—

Safely in harbour
Is the king's ſhip, in the deep *nook*. *Shak. Tem.*

By a foggy and a dirty farm
In that *nook*-ſhotten iſle of Albion. *Henry V.*

Thus entered ſhe the light-excluding cave,
And through it ſought ſome inmoſt *nook* to ſave
The gold. *Chapman.*

—The ſavages were driven out of their great Ards. into a little *nook* of land near the river of Strangford. *Davies.*

Meander, who is ſaid ſo intricate to be,
Hath not ſo many turns, nor crankling *nooks* as ſhe. *Drayt.*

What worlds or what vaſt regions hold
Th' immortal mind that hath forſook
Her manſion in this fleſhy *nook*. *Milton.*

Ithuriel and Zephon;
Search thro' this garden, leave unſearched no *nook*. *Milton.*

From the boiling cells,
By ſtrange conveyance, fill'd each hollow *nook*. *Milton.*

(1.) * NOON. *n. ſ.* [*non*, Sax. *naewn*, Welſh; *nae*, Erſe; ſuppoſed to be derived from *nona*, Latin, the *ninth hour*, at which their *cæna* or chief meal was eaten; whence the other nations called the time of their *dinner* or chief meal, though earlier in the day, by the ſame name.] 1. The middle hour of the day; twelve; the time when the ſun is in the meridian; mid-day.—

Fetch forth the ſtocks, there ſhall he ſit 'till *noon*.—
'Till *noon*! 'till night, my lord. *Shak.*

The day already half his race hath run,
And ſummon'd him to due repaſt at *noon*. *Dryd.*

—If I turn my eyes at *noon* towards the ſun, I cannot avoid the ideas which the light or ſun produces in me. *Locke.*—

In days of poverty his heart was light:
He ſung his hymns at morning, *noon*, and night. *Harte.*

2. It is taken for midnight.—

Full before him at the *noon* of night,
He ſaw a quire of ladies. *Dryden.*

(2.) * NOON. *adj.* Meridional.—

How oft the *noon*, how oft the midnight bell,
That iron tongue of death! with ſolemn knell,
Knocks at our hearts! *Young.*

(1.) * NOONDAY. *n. ſ.* [*noon* and *day*.] Mid-day.

The bird of night did ſit,
Ev'n at *noonday*, upon the market-place,
Houting and ſhrieking. *Shak.*

—The dimneſs of our intellectual eyes, Ariſtotle fitly compares to thoſe of an owl at *noonday*. *Boyle.*

(2.) * NOONDAY. *adj.* Meridional.—

The ſcorching ſun was mounted high,
In all its luſtre to the *noonday* ſky. *Addiſon.*

* NOONING. *n. ſ.* [from *noon*.] Repoſe or repaſt at noon.

(1.) * NOONTIDE. *n. ſ.* [*noon* and *tide*.] Midday; time of noon.—

Sorrow breaks ſeaſons and repoſing hours,
Makes the night morning, and the *noontide* night. *Shak.*

(2.) * NOONTIDE. *adj.* Meridional.—

Phaeton hath tumbled from his car,
And made an evening at the *noontide* prick. *Shak.*

All things in the beſt order to invite
Noontide repaſt, or afternoon's repoſe. *Milt.*

The *noontide* yellow we in vain require;
'Tis black in ſtorm, or red in light'ning fire. *Prior.*

NOOPOUR, a town of Indoſtan, in Guzerat, 55 miles E. of Surat. Lon. 73. 50. E. Lat. 21. 11. N.

* NOOSE. *n. ſ.* [*noſada*, entangled; a word found in the gloſſes of *Lipſius*. Mr *Lye*.] A running knot which the more it is drawn binds the cloſer.—

Can'ſt thou with a weak angle ſtrike the whale?
Catch with a hook, or with a *nooſe* inthral? *Sandys.*

Where the hangman does diſpoſe,
The ſpecial friend the knot of *nooſe*. *Hudibras.*

They run their necks into a *nooſe*,
They'd break 'em after, to break looſe. *Hudib.*

Falſely he falls into ſome dangerous *nooſe*,
And then as meanly labours to get looſe. *Dryd.*

—A rope and a *nooſe* are no jeſting matters. *Arb.*

* *To* NOOSE. *v. a.* [from the noun.] To tie in a nooſe; to catch; to entrap.—The ſin is woven with threads of different ſizes, the leaſt of them ſtrong enough to *nooſe* and entrap us. *Government of the Tongue.*

(1.) NOOTKA, a country on the NW. coaſt of N. America, upon NOOTKA SOUND. Upon the ſea coaſt the land is tolerably high and level; but within the ſound it riſes into ſteep hills, which have an uniform appearance. The climate is remarkably mild. Capt. Cook found that the thermometer never fell lower even in the night than 42°, while in the day-time it often roſe to 60°. The trees of which the woods are compoſed, are the Canadian pine, white cypreſs, and ſome other ſorts of pine. The trees grow here with great vigour, and are of a large ſize. About the rocks and borders of the woods are ſtrawberry plants; and raſpberry, currant, and gooſeberry buſhes. The principal animals are racoons, martens, and ſquirrels. Birds are not numerous, and are remarkably

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markably ſhy, owing to their being continually haraſſed by the natives, for the ſake of their feathers, as well as for food. The *quebrantahueſſos*, ſhags, and gulls, were ſeen off the coaſt; and the two laſt were alſo frequent in the ſound. The principal ſorts of fiſh are herrings and breams, one ſpecies ſilver-coloured, and another brown. Captain Cook and Dr King, who viſited this place, conſider it as an excellent ſhelter for ſhips. In Meare's *Voyages to the North-weſt Coaſt of America*, the following account is given of the natives: "The people of the Nootka nation are, in general, robuſt and well proportioned: their faces are large and full, their cheeks high and prominent, with ſmall black eyes: their noſes are broad and flat, their lips thick, and they have generally very fine teeth, and of the moſt brilliant whiteneſs. The manner in which the children of Nootka are treated, when young, is not more extraordinary from its ſtrange and total inutility, than from its agreement with the cuſtoms of the Chineſe and Tartars. The head of the infant is bound by the mother with a kind of fillet of ſeveral folds, as low down as the eyes, in order to give it a certain form; yet we never obſerved that any of the infants, in ſuch a ſtate of preparation for ſugar-loaf heads, ſuffered any viſible pain or inconvenience. Though the cuſtom of compreſſing the head in this manner gives them an unpleaſant appearance, by drawing up the eye-brows, and ſometimes producing ſquinting, as well as flattening the noſe and diſtending the noſtrils, they are by no means an ill-looking race of people. They have alſo the cuſtom, which prevails in many Indian nations, of plucking out the beard by the roots. Some of them, however, when they become old and infirm, ſuffer their beards to grow without interruption. But notwithſtanding they have ſo great an averſion to the hair of their chin, that of the head is an object of their attentive vanity: it is ſtrong, black, and gloſſy, grows to a conſiderable length, and is either tied in a kind of knot on the top of their heads, or ſuffered to hang down their backs in flowing negligence. In their exterior form they have not the ſymmetry found in many other Indian nations. Their limbs, though ſtout and athletic, are crooked and ill ſhaped; their ſkin is white; and we have ſeen ſome of the women, when in a ſtate of cleanlineſs, who not only poſſeſſed the fair complexion of Europe, but features that would have attracted notice, for their delicacy and beauty. But theſe examples of beauty are not numerous. Their hair and eyes are black; they are reſerved and chaſte; and examples of looſe and immodeſt conduct were very rare among them. There were women in St George's Sound, whom no offers could tempt to meretricious ſubmiſſions." All accounts agree in characterizing the inhabitants as "a very inoffenſive race; yet a cuſtom of a very unnatural and cruel kind prevails among them; for, together with many other articles which they expoſed to ſale to Captain Cook's ſhips, they brought human ſkulls and hands (part of the fleſh ſtill remaining on them), which they acknowledged they had been feeding on; and ſome of them had evident marks of the fire. Hence it is too apparent that the horrid practice of devouring their enemies exiſts here, as well as at New Zealand and other South Sea Iſlands; and hence, too, appears what men of the beſt natural diſpoſitions will be, if left entirely to the freedom of their own will, without law to controul or religion to inſtruct them. As there are but two villages of Nootka inhabited, the number of people cannot be many; perhaps about 2000 in all. The employment of the men is chiefly fiſhing, &c. whilſt the women manufacture their garments. Their ingenuity in this and in the mechanic arts is far from being inconſiderable; and in the imitative arts their ſkill is very great. In Cook's Voyages, we find the following obſervations: "Little knowledge we can be ſuppoſed to have acquired of the political and religious inſtitutions eſtabliſhed among theſe people. We diſcovered, however, that there are ſuch men as chiefs, diſtinguiſhed by the title of *Acweek*, to whom the others are, in ſome degree, ſubordinate. But the authority of each of theſe great men ſeems to extend no farther than to his own family, who acknowledge him as their head. Nothing that we ſaw could give us any inſight into their notions of religion, except the figures called *Khumma*. Theſe, perhaps, were idols; but as the word *acweek* was frequently mentioned when they ſpoke of them, they may be images of ſome of their anceſtors, whoſe memories they venerate. Their language is neither harſh nor diſagreeable, farther than proceeds from their pronouncing the *k* and *h* with leſs ſoftneſs than we do. The affinity it may bear to other languages, we have not been able to trace, not having proper ſpecimens to compare it with; but from the few Mexican words we have procured, there is an obvious agreement in the frequent terminations of the words in *l*, *tl*, or *x*. The word *wakaſh* was frequently in the mouths of the people of Nootka. It ſeemed to expreſs approbation, applauſe, and friendſhip." A ſmall aſſociation of Britiſh merchants reſident in the Eaſt Indies, had, early in 1786, formed the project of opening a trade to this port, for ſupplying the Chineſe market with furs. The principal point towards which theſe expeditions were directed, was Nootka; and the adventurers, being ſatisfied with their traffic, took meaſures, in 1788, to ſecure a permanent ſettlement; at the ſame time that the ſhipping employed in this expedition was generally two, and never exceeded four ſmall veſſels. The Spaniards, jealous of the intruſion of the Engliſh into a part of the world which they had long regarded as their excluſive property, ſent a frigate of 26 guns, under Don Martinez, from Mexico, to put an end to this commerce. The frigate arrived in May 1789, and captured two Engliſh veſſels in July following, at the ſame time taking poſſeſſion of the ſettlement formed on the coaſt. This had almoſt involved us in an expenſive war. Happily, however, for both countries, the matter was at length, after great altercation, amicably ſettled by a convention in 1790, by which the Britiſh were allowed a free navigation and commerce with the people of Nootka.

(2.) NOOTKA, or KING GEORGE'S ISLAND, an iſland in Nootka Sound. Lon. 126. 40. E. Lat. 49. 35. N.

(3.) NOOTKA SOUND, or, as it was called by Captain

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Captain Cook, KING GEORGE'S SOUND, lies in Lat. 49. 33. N. But geographers differ greatly about the Longitude. The editors of the Encyclopædia Britannica place it in Lon. 153. 12. W. Dr Brookes and John Walker in 126. 48. W. of Greenwich; while the Rev. C. Cruttwell places it in 233. 12. *East* of the same meridian.

NOOVILLA, a town of E. Florida, 54 miles ESE. of St Mark.

NOPAL, RAQUETTE, or INDIAN FIG, a plant so named by the Indians, from which the cochineal is collected in Mexico. These plants bear fruits which resemble our figs; tinge the urine of those who eat them; and probably communicate to the cochineal the property which makes it useful to the dyer. The Indians of Mexico cultivate the nopal tree near their habitations, and so, as it were, the insect which affords the cochineal. They make small nests of moss or fine herbs; put 12 or 14 cochineals into each nest; place 3 or 4 of these nests on each leaf of the noppal; and fasten them there by the prickles of the plant. In the course of a few days, thousands of insects issue out, and fix themselves upon the parts of the leaf which are best sheltered and afford the most nourishment. The cochineals are collected several times in the course of the year; and are deprived of life by scalding them, or by putting them into an oven. See COCCUS, N° 1; and COCHINEAL, § 2.

NOPALCOCHQUETZATLI, or NOPALXOCHQUETZATLI, } the prickly pear of Mexico, common over all the West Indies. See CACTUS, and *Plate* CCXLVI.

* NOPE. *n. s.* [*ruhicilla*, Lat.] A kind of bird called a bullfinch or redtail.

NOPELN, or CHRISTIANOPEL. See CHRISTIANOPLE. It was so named by Christian IV. K. of Denmark, who gave it a charter of privileges in 1603; but it was taken by Gustavus Adolphus in 1610. It is 25 miles NE. of Carlscroon.

NOPH. See MEMPHIS.

NOPIA, an ancient town of Bœotia.

NOQUETS BAY, a bay of Canada on the NW. coast of Lake Michigan, 45 miles long and 18 broad. Lon. 86. 20. W. Lat. 45. 25. N.

(1.) NOR. *conjunct.* [*ne or.*] 1. A particle marking the second or subsequent branch of a negative proposition: correlative to *neither* or *not*.—

I neither love, *nor* fear thee. *Shak.*

Neither love will twine *nor* hay. *Marvel.*

2. Two negatives are sometimes joined, but not according to the propriety of our present language, though rightly in the Saxon—

Mine eyes,
Which I have darted at thee, hurt thee not;
Nor, I am sure there is *no* force in eyes
That can do hurt. *Shak.*

3. *Neither* is sometimes included in *nor*, but not elegantly.—

Before her gates, hill wolves and lions lay;
Which with her virtuous drugs so tame the made,
That wolfe, *nor* lion, would one man invade. *Chapman.*

Pow'r, disgrace, *nor* death could ought divert
Thy glorious tongue thus to reveal thy heart. *Daniel.*

Simois *nor* Xanthus shall be wanting there;
A new Achilles shall in arms appear. *Dryden.*

4. *Nor* is in poetry used in the first branch for *neither*.—

Idle nymph, I pray thee, be
Modest and not follow me,
I *nor* love myself *nor* thee. *Ben Johnson.*

Nor did they not perceive their evil plight,
Or the fierce pains not feel. *Milton.*

I whom *nor* avarice, *nor* pleasure move;
Yet must myself be made a slave to love. *Walsh.*

(2.) NOR, by a great number of modern English authors, is almo ftentirely disused as a *negative* conjunction answering to *Neither*, and the *affirmative* conjunction OR most absurdly substituted in its stead. (See LANGUAGE, *Sect.* VIII; and NEITHER, § 2.) Were this abuse of the word only to be found in writings of inferior rank, it would hardly merit notice; but in fact it is to be found in the works of many authors of the highest reputation, who have written within these 40 years. It is even often committed by the *Reviewers* themselves, who ought to check every error in the language of authors, instead of setting them a bad example. The late celebrated Mr Edmund Burke, whose flowers of rhetoric concealed many defects in style, and even recommended them to his imitators and admirers, was among the first of our public orators who introduced this absurdity into the English language.

NORA, a town of Sweden, in Westmanland.

NORAN, or NORIN. See NORIN, N° 2.

NORBARKE, a town of Dalecarlia.

NORBEKITEN, a town of Prussia, in the prov. of Natangen, on the left bank of the Pregel, 48 miles E. of Konigsberg. In 1757, the Russians being encamped near it, they were attacked by Frederick the Great, and defeated with the loss of 14,000 men killed, while that of the Prussians was only 2000; though the Russian accounts stated it at 10,000, and their loss at 7000.

NORBERG, a town of Sweden in Westmanland, famous for excellent iron mines.

NORBURY, a town of England, in Staffordshire, on the SW. side of Eccleshall. Here is a surprising echo, which, taken 440 yards NE. of the manor-house, near a little bank under a wood side, repeats in a still day 10 or 11 syllables very distinctly, or 12 or 13, if spoke very quick. The banks of the Black Meer, in this parish, grow forward every year over the surface of the water, at the rate of 3 or 4 yards every 7 years.

NORCIA, a city of Italy, in the duchy of Spoleto, and territory of the Pope, seated among mountains. It was, till seized with all the Pope's territories by Bonaparte, a kind of republic, and was governed by its own magistrates. It is 18 miles SE. of Spoleto, and 48 NE. of Rome. Lon. 13. 4. E. Lat. 42. 36. N.

NORDBERG, J. A. chaplain to Charles XII. accompanied him in all his campaigns, and wrote his history in Swedish.

NORDBORG, a town of Denmark, in Sleswick, N. of the isle of Alsen. Lon. 9. 43. E. Lat. 55. 3. N.

NORD, COTES DU. See COTES, N° 6.

(1.) NORDEN, Frederic Lewis, F. R. S. an ingenious traveller and naval officer in the Danish service,

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ſervice, born at Gluckſtadt in Holſtein, in 1708. He was well ſkilled in mathematics, ſhip-building, and architecture; and in 1732 obtained a penſion to travel for the purpoſe of ſtudying the conſtruction of ſhips, particularly the galleys and other rowing veſſels uſed in the Mediterranean. He ſpent near three years in Italy; and Chriſtian VI. being deſirous of obtaining a circumſtantial account of Egypt, Mr Norden at Florence received an order to extend his travels to that country; which he executed ſo much to that monarch's ſatisfaction, that he made him a captain and commiſſioner in the navy. His *Travels into Egypt and Nubia* were printed at Copenhagen in folio, 1756; and ſoon after tranſlated into Engliſh by Dr Peter Templeman. In the war between England and Spain, Capt. Norden attended Count Ulric Adolphus, a ſea captain, to England; and they went out volunteers under Sir John Norris, and afterwards under Sir Chaloner Ogle. During his ſtay in London, Mr Norden was made F. R. S. and gave the public drawings of ſome ruins and coloſſal ſtatues at Thebes in Egypt, with an account of them in a letter to the Royal Society, in 1741. Taking a tour to France, he died at Paris in 1742.

(2.) NORDEN, John, an Engliſh topographer and ſurveyor of the crown lands under K. James I. He wrote a deſcription of Middleſex, the Surveyor's Guide, and ſeveral other works.

(3.) NORDEN, an ancient ſea port town of Germany, in E. Frieſland, with a commodious harbour; 3 miles from the ſea, and 15 N. of Emden. Lon. 24. 34. E. Ferro. Lat. 53. 37. N.

NORDENFIELDS. See NORWAY, N° 1. § 11.

NORDERNAY, an iſland near the coaſt of E. Frieſland: 4 miles long and 2 broad. Lon. 24. 30. E. Ferro. Lat. 53. 45. N.

NORDFOE, a lake of Norway, 32 miles in circumference, and 50 W. of Chriſtiania.

NORDGAW. See Bavaria, N° 6.

NORDHAUSEN, an ancient imperial city of Germany in Lower Saxony, ſeated on the Zorge, and conſiſting of the old and new towns. The inhabitants are proteſtants. In 1180, it was burnt by Henry the Lion, D. of Saxony. By the deciſion of Bonaparte, in Aug. 1802, reſpecting the indemnities, this city with thoſe of MUNSTER OLPHEN, MULHAUSEN, &c. were allotted to the K. of Pruſſia. It has a good trade in corn, brandy, marble, and alabaſter. It is 25 miles SW. of Habberſtadt, and 38 N. of Erfurt. Lon. 11. 3. E. Lat. 51. 36. N.

NORDHEIM, a town of Germany, in Hanover. Of the 4 large towns of this principality, it is the third in order. It is ſituated on the Ruhme, which runs into the Leine, and contains 500 houſes, and has a ſecularized Lutheran abbey, one pariſh church, with ſeveral charitable foundations, and manufactures.

NORDKIOPING, a town of Sweden in Eaſt Gothland. Its name ſignifies *the northern market* in the Swediſh language. It ſtands on the banks of a large river called *Motala*, which coming from the lake *Peter*, falls a little lower into a gulf called *Brawiken*. It is the largeſt and moſt populous town in Sweden, next to Stockholm, conveniently ſituated near the ſea on a navigable river, which brings large veſſels up to the middle of the town. There are ſome handſome ſtreets, and the churches and houſes in general are neatly built; but the greateſt curioſity is the famous copper mines, where a vaſt number of people are conſtantly at work. In this article they carry on a very good trade; alſo in leather, ſteel, and guns, &c. It is 10 miles in circumference, but the inhabitants do not exceed 10,000. The Motala flows through the town, forms a ſeries of cataracts, and is divided into four principal ſtreams which encircle ſeveral rocky iſlands, covered with houſes and manufactories. At the extremity of the town it is navigable for ſmall veſſels. Several manufactories are eſtabliſhed; 55 fabrics of cloth, which employ 1500 men; 3 ſugar-houſes; 50 mills for grinding corn, which is exported in large quantities; 1 of ſnuff; and a braſs foundery. A ſalmon fiſhery gives employment and riches to many of the inhabitants. Lon. 15. 30. E. Lat. 58. 20. N.

NORDKIRCHEN, a town of Germany in the ci-devant biſhopric of Munſter, ſecularized in 1802, and allotted to the Prince of Salm-Salm, by Bonaparte, as part of his indemnity.

(1.) NORDLAND, one of the 5 general diviſions of Sweden, bounded on the N. by Lapland, E. by the Gulf of Bothnia, S. by Upland and Dalecarlia, and W. by Norway, Dalecarlia, and Lapland. It was anciently a diſtinct monarchy. The ſurface is rocky and mountainous, but has ſome fertile ſpots, interſperſed with rivers and lakes. It has ſeveral rich mines, and abounds with timber, game, wild-geeſe, and cattle. It comprehends 7 provinces; viz. Geſtricia, Helſingia, Medelpadia, Heimtland, Heriedalia, Wingermannia, and W. Bothnia.

(2.) NORDLAND, a province or diſtrict of Northern Norway. See NORWAY, N° 1.

NORDLEDA, a town of Saxony, in Saxe-Lauenburg; 4 miles SSW. of Ottenburg.

NORD LIBRE. See CONDE, N° 1.

NORDLINGEN, or NORLINGEN, an imperial city of Germany, in Suabia, ſeated on the Egre. It was burnt in 1238. Near it the Swedes were defeated by the imperialiſts in 1634. In 1647, it was beſieged by them for 17 weeks, during which it ſuffered by an accidental fire. It is 38 miles NW. of Augſburg, and 54 E. of Stutgard. By Bonaparte's deciſion of the indemnities, Aug. 21, 1802, it was allotted, among other cities, to the elector of Bavaria. Lon. 11. 49. E. Lat. 48. 52. N.

NORDMARSCH, an iſland of Denmark, in the N. ſea; 3 miles NW. of Nordſtrand.

NORDON, a town of Pruſſia, in Natangen.

NORDORF, a town of Holſtein, 15 miles SW. of Kiel, and 35 N. of Hamburg.

NORDSTRAND, an iſland of Denmark, near the coaſt of Sleſwick, 36 miles long and 15 broad. Lon. 8. 50. E. Lat. 54. 35. N.

NORDTHAUSEN. See NORDHAUSEN.

(1.) NORE, a noted place in the THAMES, at the point of the Sand-bank, which runs off from the iſle of Grain to the E. A light is fixed here on a floating veſſel.

(2.) NORE, a river of Ireland, in Waterford, which paſſes by Kilkenny, and runs into the Barrow, 2 miles N. of New Roſs.

(3.) NORE,

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(3.) NORE, BLACK, a cape on the coaſt of Somerſetſhire, in the mouth of the Severn, 5 miles SW. of that of the Avon.

NOREGNA, a town of Spain, in Aſturia.

(1.) NORES, Jaſon De, a ſcholar, poet, and philoſopher, born at Nicoſia in Cyprus. He loſt his fortune when the Turks took that iſland in 1570. He retired to Padua, where he acquired great reputation by teaching moral philoſophy; but his character had a caſt of ſeverity. Nores attacked the *Paſtor Fido* of Guarini, who confuted him in a piece printed at Ferrara in 1588. Nores made a reply in 1590; and the poet was preparing an anſwer ſtill more ſevere, when Nores died of grief for the baniſhment of his only ſon, for having killed a Venetian in a duel. He left behind him many works. The chief of his Italian works are, 1. The Poetics; Padua, 1588, 4to. 2. A Treatiſe on Republics, 1578, 4to. 3. A Treatiſe on the World and its Parts; Venice, 1571, 8vo. 4. Introduction to 3 books of Ariſtotle's Rhetoric; Venice, 1584, 8vo. 5. A Treatiſe on what Comedy, Tragedy, and Epic Poetry, may receive from Moral Philoſophy. His Latin works are, 1. *Inſtitutio in Philoſophiam Ciceronis;* Padua, 1576, 8vo. 2. *Brevis et diſtincta ſumma præceptorum de arte diſcendi, ex libris Ciceronis collecta;* Venice, 1553, 8vo; a good work. 3. *De Conſtitutione partium humanæ et civilis philoſophiæ;* 4to. 4. *Interpretatio in artem poeticam Horatii,* &c. All his works exhibit great perſpicuity, accuracy, profound erudition, happy expreſſions, an elevated and ſometimes forcible ſtyle.

(2.) NORES, Peter De, the ſon of Jaſon, was ſucceſſively ſecretary to ſeveral cardinals, at once a man of letters and a man of buſineſs, and left behind him different MSS.; among others, the life of Paul IV. in Italian.

(1.) NORFOLK, a county of England, ſo called from its northern ſituation in reſpect of Suffolk, is bounded on the N. and E. by the German ocean; on the S. and SE. by Suffolk, from which it is parted by the Waveney and the Leſſer Ouſe; on the W. it is ſeparated from Cambridgeſhire by the Greater Ouſe, and from a ſmall part of Lincolnſhire by the Waſhes. According to Mr Cruttwell, it extends in length 59 miles, in breadth 38; but Dr Brookes and J. Walker make it 77 miles long from E. to W. and 45 broad. It is about 140 miles in circumference. It contains an area of 1426 ſquare miles, one city, 34 market towns, and 711 villages, according to the book of rates. It is divided into 33 hundreds, 164 vicarages, and 660 pariſhes. The total population, by the report to parliament, June 26, 1801, was 129,965 males, 143,664 females; in all 273,629: the number of houſes 47,699. The air varies in different parts of the county, according to the ſoil, which in ſome places is marſhy, eſpecially on the ſea-coaſt, and there the air is foggy and unwholeſome; in others it is clayey and chalky, poor, lean, and ſandy, and there the air is good. The county is almoſt all champaign, except in ſome places, where are gentle hills. The marſh lands yield rich paſture for cattle; the clay grounds peaſe, rye, and barley; and the ſandy heaths feed vaſt flocks of large ſheep, of which ſome villages keep 4000 or 5000. Theſe heaths abound alſo in rabbits of a ſilver grey colour. Walſingham is noted for ſaffron. Great quantities of mackarel are caught upon the coaſts in ſpring; and herrings in September; eſpecially at Yarmouth, where they are cured to great perfection. Wood and honey are alſo very plentiful, and on the coaſts jet and ambergreaſe are ſometimes found. The inhabitants are generally ſtrong and active, ſagacious and acute. They live much on puddings called *Norfolk dumplings*. They are for the moſt part in eaſy circumſtances, but were formerly very litigious; in conſequence of which lawyers ſwarmed among them to ſuch a degree, that a ſtatute was made, ſo early as the reign of Henry VI. to reſtrain their number. The manufactures are chiefly woollen and worſted ſtuffs, and ſtockings, for which they are well ſupplied with wool from the vaſt flocks of ſheep bred in it. It is in the dioceſe of Norwich, and ſends 12 members to parliament, viz. 2 for the ſhire, 2 for Norwich, and 2 for each of the boroughs of Lynn Regis, Great Yarmouth, Thetford, and Caſtle-riſing. The county is well watered, and ſupplied with fiſh by the rivers Yare, Thyrn, Waveney, the Greater and Leſſer Ouſe, and the Bure, beſides rivulets. The Bure abounds in excellent perch. This county was famous at a very early period for its fine worſted ſtuffs, and its fiſheries, which were extenſive and valuable, and ſeem to have been carried on with ſpirit. Its ſuperficial contents are eſtimated at 1,094,400 acres, of which 729,600 are arable, 10,000 under wood, 126,692 meadow and paſture, 63,346 warren and ſheep walks, 63,346 marſh lands, and 80,000 in commons and waſte lands. There are above 30,000 ſheep. Corn is exported, and about 20,000 fat bullocks annually. NORWICH is the capital.

(2.) NORFOLK, a townſhip of Connecticut, in Litchfield county, 15 miles N. of Litchfield.

(3.) NORFOLK, a maritime county of Maſſachuſetts, containing 24,160 citizens in 1795. It is bounded on the N. by Suffolk county, E. by the Atlantic, S. by Briſtol and Plymouth counties, W. by Worceſter, and NW. by Middleſex; and contains 20 townſhips. It is 43 miles long from E. to W. and 20 broad from N. to S. Dedham is the capital. See DEDHAM, N° 3.

(4.) NORFOLK, a county of Virginia, contiguous to N. Carolina; bounded on the N. by the James, E. and SE. by Princeſs Ann county, SW. and W. by Nanſemond. It is 44 miles long, 22 broad, and contained 9179 citizens and 5345 ſlaves in 1795. The capital is NORFOLK, N° 5.

(5.) NORFOLK, the capital of the above county, (N° 4.) is ſeated on the E. bank of Elizabeth river, and has a ſafe harbour, capable of containing 300 ſhips. The river is 400 yards broad, and has 18 feet water up to the town. The town was burnt on the 1ſt Jan. 1766, by order of Lord Dunmore, ſay the American hiſtorians, or, according to the Britiſh, by the Americans themſelves. (See AMERICA, § 14.) It has ſince been rebuilt, and is now the chief commercial town of Virginia. It has a court-houſe, 2 churches, a theatre, an academy, and many warehouſes. In 1790, it contained 1655 citizens and 1294 ſlaves. It has a good

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trade with Europe and the W. Indies. It is 30 miles NE. of Suffolk, and 389 SE. of Philadelphia. Lon. 76. 28. W. Lat. 36. 55. N.

(6.) NORFOLK ISLAND, an island of the South Sea, lying in 29° 12′ 30″ Lat. S. and 168° 16′ Lon. E. A colony was lately settled on it; and the following account of it is given in *Governor Philip's Voyage to Botany Bay*, &c. "Norfolk Island is about 7 leagues in circumference; and if not originally formed by the eruption of volcanic matter, must have contained a volcano. This conclusion is formed from the vast quantity of pumice-stone scattered in all parts of it, and mixed with the soil. The crater, or some traces of it, will be found at the summit of a mountain, near the middle of the island, which the commandant has named *Mount Pitt*. The island is well watered. At or near Mount Pitt rises a strong and copious stream, which, flowing through a very fine valley, divides into several branches, each of which may be used in turning mills; and in various parts of the island springs have been discovered. The climate is pure, salubrious, and delightful, preserved from oppressive heats by constant breezes from the sea, and of so mild a temperature throughout the winter, that vegetation continues without interruption, one crop succeeding another. Refreshing showers from time to time maintain perpetual verdure; not of grass, for none grows in the island, but of trees, shrubs, &c. On the leaves of these the sheep, hogs, and goats, thrive and fatten very much. To the salubrity of the air every individual can bear ample testimony, from the uninterrupted state of good health which has been enjoyed. When our settlers landed, there was not a single acre clear of wood in the island; and the trees were so bound together by that kind of creeping shrub called *supple jack*, interwoven in all directions, as to render it very difficult to penetrate far among them. The commandant, by indefatigable activity, soon caused a space to be cleared sufficient for the requisite accommodations, and for the production of esculent vegetables of all kinds in abundance. The people were soon settled in commodious houses; and, according to the declarations of Mr King himself, in his letters to Governor Philip, this colony would be in a situation to support itself entirely without assistance in less than 4 years. Fish are caught in great plenty, and very fine turtle. The woods are inhabited by innumerable tribes of birds, many of them very gay in plumage. The most useful are pigeons, which are very numerous; and a bird not unlike the Guinea fowl, except in colour (being chiefly white); both of which were at first so tame as to suffer themselves to be taken by hand. Of plants that afford vegetables for the table, the chief are the cabbage palm, the wild plantain, the fern tree, a kind of wild spinage, and a tree which produces a diminutive fruit, bearing some resemblance to a currant. But the productions which give the greatest importance to Norfolk Island are the pines and the flax plant; the former rising to a size and perfection unknown in other places, and promising the most valuable supply of masts and spars for our navy in the East Indies; the latter not less estimable for making sail-cloth, cordage, and even the finest manufactures, growing in great plenty, and with such luxuriance as to attain the height of 8 feet. The pines measure frequently 160 or 180 feet in height, and are sometimes 9 or 10 feet in diameter at the bottom of the trunk. They rise to about 80 feet without a branch: the wood is said to be of the best quality, almost as light as that of the best Norway masts; and the turpentine obtained from it is remarkable for purity and whiteness. The fern tree is found also of a great height, measuring from 70 to 80 feet, and affords excellent food for the sheep and other small cattle. A plant producing pepper, and supposed to be the true oriental pepper, has been discovered in the island, growing in great plenty; and specimens have been sent to England, to ascertain this important point."

(7.) NORFOLK SOUND, according to Captain George Dixon, is situated in 57° 3′ Lat. N. and 135° 36′ Lon. W. It is very extensive, but how far it stretches to the N. is not known. The shore, in common with the rest of the coast, abounds with pines; there are also great quantities of the witch-hazel. There are various kinds of flowering trees and shrubs, wild gooseberries, currants, and raspberries: wild parsley is found here in great plenty, and it eats excellently either as a salad or boiled amongst soup. The saranne, or wild lily-root, grows also in great plenty and perfection. There are a few wild geese or ducks, but they are very shy.

NORHAM, a town of Durham, insulated in Northumberland, on the Tweed, near the mouth of the Till, under the castle, which was anciently erected on a steep rock, moated round for security against the incursions of the Scots. It is of great antiquity, having been built in 830, by Egfrid, Bp. of Lindisfarn, and called UBBANFORD. The remains of King Ciolwolf are interred in it. In 1121, the castle was rebuilt by Hugh Pewsey, Bp. of Durham: In 1213, it was besieged by Alexander II. king of Scots. In 1290, Edward I. held the convention in it, to settle the dispute between BRUCE and BALIOL. In 1322, it was taken by the Scots, but retaken by Edward in ten days. In 1327, it was again taken by the Scots, by storm, and great part of the town and castle destroyed. It was repaired by Bp. Fox, but attacked by the Scots before the battle of Flodden, and partly destroyed. The castle has been a formidable structure; a great part of it is in ruins; the site, with its demesnes, consisted of 1030 acres. It is 6 miles SW. of Berwick, and 330 N. of London.

NORHAMSHIRE, a district of Northumberland, surrounding NORHAM.

NORHOLM, a town of Norway, in the diocese of Christiansand; 16 miles NNE. of that city.

NORIA, a hydraulic machine much used in Spain. It consists of a vertical wheel of 20 feet diameter, on the circumference of which are fixed a number of little boxes or square buckets, for raising the water out of the well, communicating with the canal below, and emptying it into a reservoir above, placed by the side of the wheel. The buckets have a lateral orifice to receive and to discharge the water. The axis of this wheel is embraced by 4 small beams, crossing each other at right angles, tapering at the extremities, and forming

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ming 8 little arms. This wheel is near the centre of the horſe walk, contiguous to the vertical axis, into the top of which the horſe-beam is fixed; but near the bottom it is embraced by 4 little beams, forming 8 arms ſimilar to thoſe above deſcribed, on the axis of the water wheel. As the mule which they uſe goes round, theſe horizontal arms, ſupplying the place of cogs, take hold, each in ſucceſſion, of thoſe arms which are fixed on the axis of the water wheel, and keep it in rotation. This machine, than which nothing can be cheaper, throws up a great quantity of water; yet it has two defects: the firſt is, that part of the water runs out of the buckets and falls back into the well after it has been raiſed nearly to the level of the reſervoir: the 2d, that a conſiderable proportion of the water to be diſcharged is raiſed higher than the reſervoir, and falls into it only at the moment when the bucket is at the higheſt point of the circle, and ready to deſcend. Both theſe defects might be remedied with eaſe, by leaving theſe ſquare buckets open at one end, making them ſwing on a pivot fixed a little above their centre of gravity, and placing the trough of the reſervoir in ſuch a poſition as to ſtop their progreſs whilſt perpendicular; make them turn upon their pivot, and ſo diſcharge their contents. From the reſervoir the water is conveyed by channels to every part of the garden; theſe have diviſions and ſubdiviſions or beds, ſome large, others very ſmall, ſeparated from each other by little channels, into which a boy with his ſhovel or hoe directs the water, firſt into the moſt diſtant trenches, and ſucceſſively to all the reſt, till all the beds and trenches have been either covered or filled with water. Mr Townſend, who gives the above account, thinks it is an invention of the moſt remote antiquity. By means of it the inhabitants every morning draw as much water from the well as will ſerve through the day, and in the evening diſtribute it to every quarter according to the nature of their crops. The reſervoirs into which they raiſe the water are about 20, 30, or 40 feet ſquare, and 3 feet high above the ſurface of the ground, with a ſtone cope on the wall, declining to the water, for the women to waſh and beat their cloths upon. A particular noria is uſed at Barcelona, which Mr Townſend conceives to be the original chain-pump. He compares it with ſimilar inſtruments, and ſhows its advantages and diſadvantages.

NORICI, an ancient nation of Illyricum, who inhabited Noricum, and were governed by kings who made many incurſions upon the Romans; but at laſt in the reign of Auguſtus, joining the Pannonii, were conquered by Tiberius. *Dio Paterculus.*

(I.) NORICUM CASTRUM. See NUREMBERG.

(II.) NORICUM, a Roman province, deſcribed by Ptolemy and Tacitus, ſituated between the Danube on the N. and thus ſeparated from ancient Germany; the Alpes Noricæ on the S. the river Enus on the W. which ſeparates it from Vindelica; and Mons Cetius on the E. which divides it from Pannonia; now containing a great part of Auſtria, all Saltzburg, Stiria, and Carinthia. It was anciently a kingdom under its own kings. *(Cæſar, Velleius, Suetonius.)* Tacitus reckons it among thoſe provinces which were governed by procurators, officers ſent by the emperors to receive and diſpoſe of the public revenue. It was divided into two provinces, about the time of Dioclefian and Conſtantine, *viz.*

1. NORICUM MEDITERRANEUM, extending towards the Alps; and,

2. NORICUM RIPENSE, running along the S. ſide of the Danube. How far each of theſe extended in breadth does not appear; all the account we have of the matter being from Sextus Rufus, and the *Notitia Imperii Occidentalis.* This country was anciently famous for its iron and ſteel, *(Horace)*; as that part of it now called STIRIA, ſtill is. The climate is cold and more ſparingly fruitful. *Solinus.*

NORIE, a town of Sweden, in Schonen.

(1.) NORIN, a river which riſes in a corner of the late Venetian confines, runs between the rugged marble hills, and is left entirely to itſelf from its ſource; hence a vaſt tract of land is overflowed by it, and encumbered with reeds, willows, and wild eldens. A ſmall ſpace of ground only remains dry between the roots of the hills and the marſh at a place called *Prud*, and that is all covered with pieces of ancient hewn ſtones, fragments of inſcriptions, columns, and capitals and baſ-reliefs of the beſt age, worn and deformed by time, and the barbariſm of the northern people, who began on that ſide to deſtroy Narona. (See NARONA). The inhabitants, who go often to cut reeds in the marſh, aſſert, that the veſtiges of that large city may ſtill be ſeen under water. It appears to have been extended over the plain a great way, and undoubtedly it was 3 miles long at the foot of the hills. The ancient road is now under water; and it is neceſſary to aſcend a very ſteep road, to paſs the point of a craggy hill, on which probably, before the Roman times, thoſe fortifications were erected that coſt Vetinius ſo much labour.

2. NORIN, a river of Scotland, in Forfarſhire, which riſes in the Grampians, and falls into the S. Eſk in Careſton pariſh.

NORING, a town of Germany, in Auſtria.

(1.) NORIS, Alexander, a native of Ireland, deſcended from Jaſon or James de Noris, a preſident of the order of St Auguſtin. He wrote a celebrated Hiſtory of Germany.

(2.) NORIS, Henry, cardinal, ſon of the preceding, was a great ornament of the order of the monks of St Auguſtine, and was born at Verona in 1631. He was carefully educated by his father and diſcovered from his infancy an excellent underſtanding and a quick apprehenſion. His father inſtructed him in grammar, and procured an able profeſſor of Verona, called *Moſſoleim*, to be his preceptor. At 15 he was admitted in the Jeſuits college at Rimini, where he ſtudied philoſophy; after which he applied himſelf to the writings of St Auguſtine: and taking the habit in the convent of Rimini, he ſoon diſtinguiſhed himſelf by his erudition; inſomuch, that as ſoon as he was out of his noviciate, the general of the order ſent for him to Rome to give him an opportunity of improving himſelf. He ſpent whole days and nights in the library of the Angeliques of St Auguſtine; and ſtuck to his books 14 hours a-day till he became a cardinal. Thus he

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he became qualified to inſtruct others; and on this errand he was ſent firſt to Pezaro, and thence to Perouſa, where he took his degree of D. D.; after which, proceeding to Padua, he applied himſelf to finiſh his *Hiſtory of Pelugianiſm*. He had begun it at Rome in 1657, and the book was printed at Florence in 1673. In 1674, the great duke of Tuſcany invited him to that city, made him his chaplain, and profeſſor of eccleſiaſtical hiſtory in the univerſity of Piſa. In his hiſtory he defended the condemnation pronounced, in the 8th general council, againſt Origen and Mopſueſta, the firſt authors of the Pelagian errors: he alſo added an Account of the Schiſm of Acquileia, and a Vindication of the Books written by St Auguſtine againſt the Pelagians and Semi-Pelagians. The work had procured him a great reputation, but met with ſeveral antagoniſts, to whom he publiſhed anſwers: the diſpute grew warm, and was carried before the inquiſition. There the hiſtory was examined with the utmoſt rigour, and the author diſmiſſed without cenſure. It was reprinted twice afterwards, and the author honoured by Pope Clement X. with the title of *Qualificator of the Holy Office*. Notwithſtanding this, the Pelagian Hiſtory was accuſed afreſh before the inquiſition in 1776; but it came out again with the ſame ſucceſs. Mr Norris was now ſuffered to remain in peace for 16 years, and taught eccleſiaſtical hiſtory at Piſa, till he was called to Rome by Innocent XII. who made him under-librarian of the Vatican in 1692. This poſt being a ſtep to a cardinal's hat, his accuſers publiſhed ſeveral new pieces againſt him. The pope appointed ſome learned divines, who had taken neither ſide, to re-examine Noris's books, and make their report; which was ſo advantageous to the author, that the pope made him counſellor of the inquiſition. Yet one of his adverſaries attacked him afreſh under the title of a *Scrupulous Doctor of the Sorbonne*. Noris, in a work which appeared in 1695, under the title of *An Hiſtorical Diſſertation concerning one of the Trinity that ſuffered in the Fleſh*, anſwered all accuſations ſo much to the ſatisfaction of the Pope, that he honoured him with the purple in 1695. After this, he was employed in the moſt important affairs, and on the death of cardinal Caſſanati, was made chief library-keeper of the Vatican in 1700; and in 1702, nominated, among others, to reform the calendar; but he died at Rome in 1704 of a dropſy. He was one of the moſt learned men in the 17th century, and was a member of the academy; whence he aſſumed the name of *Eucrates Agoretico*. His works are numerous, and were publiſhed at Verona, in 1729 and 1730, in 5 vols. folio.

NORKOPING. See NORDKIOPING.

NORLAND. See NORDLAND.

NORLINGEN. See NORDLINGEN.

(1.) NORMAN. *adj.* Of or from NORMANDY.

(2.) NORMAN CHARACTERS, a ſpecies of writing introduced into England by William I. From ſome old MSS. the Norman writing appears to have been compoſed of letters nearly Lombardic. In regal grants, charters, public inſtruments, and law proceedings, this charter was uſed with very little variation from the reign of the Conqueror to that of Edward III. See WRITING.

NORMANDY, a ci-devant province of France, bounded on the N. by the Engliſh channel; E. by Picardy and Iſle of France; S. by Perche and Maine, and part of Bretagne; and W. by the ocean. It is about 155 miles in length, 85 in breadth, and 600 in circumference. It is very fertile, and abounds in all things, except wine, but they ſupply that defect by cyder and perry. There are vaſt meadows, and fat paſtures, and the ſea yields plenty of fiſh. It contains iron, copper, and a great number of rivers and harbours. It carries on a great trade, is very populous, and comprehends a vaſt number of towns and villages. It was divided into the Upper and Lower. It contained 7 biſhoprics, 4189 pariſhes, and 80 abbeys. The inhabitants are ingenious, but fond of law. The NORMANS, a people of Denmark and Norway, having entered France under Rollo, Charles the Simple ceded this country to them in 912, which from that time was called *Normandy*, and contains about 8200 ſquare miles. Rollo was the firſt duke, and held it as a fief of the crown of France, and ſeveral of his ſucceſſors after him, till William, the 7th duke, conquered England in 1066: from which time it became a province of England, till it was loſt in the reign of king John, and reunited to the crown of France; but the Engliſh ſtill keep the iſlands on the coaſts of Normandy. The principal rivers are the Seine, the Eure, the Aure, the Iton, the Dive, the Andelle, the Rille, the Touque, the Dromee, and the Orne: among the ſeaports, the principal are thoſe of Dieppe, Havre, Honfleur, Cherburg, and Granville. *Rouen* was the capital. It is now divided into the departments of the Channel, Calvados, Eure, Orne, and Lower Seine. A ſmall part of it is alſo included in that of the Eure and Loire.

1. NORMANDY, LOWER, bordered on Bretagne; and,

2. NORMANDY, UPPER, on Picardy.

NORMANS, a fierce warlike people of Norway, Denmark, and other parts of Scandinavia. They at different times over-ran and ravaged moſt countries in Europe: to the reſpective hiſtories of which we therefore refer for a fuller account of them. See particularly ENGLAND, § 18; FRANCE, § 15—20; ITALY, § 20; NAPLES, § 7—9; NORMANDY, SICILY, &c.

(1.) NORMAN'S ISLAND, an iſland of Maſſachuſetts, near the S. coaſt of Martha's Vineyard. Lon. 70. 45. W. Lat. 41. 13. N.

(2.) NORMAN'S ISLAND, one of the VIRGIN iſlands; 18 miles from St John.

NORMAN'S LAW, a high hill of Scotland, in Fifeſhire, in the pariſh of Criech, within a mile of the Tay, which is ſeen from the N. windows of Edinburgh. There are veſtiges of a camp on it.

NORMANTON, the name of 9 Engliſh villages, viz. of 2 in Derbyſhire, 3 in Nottinghamſhire, and one each in Leiceſter, Rutland, Wilts, and York ſhires.

NORMIER, a town of France, in the dep. of Cote D'Or, and diſtrict of Semur; 9 miles SSE. of Semur.

NORNDORF, a town of Suabia, 12 miles S. of Augſburg; and 36 ENE. of Ulm.

NOROY, two towns of France; viz.

1. NOROY

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1. NOROY L' ARCHEVEQUE, in the dep. of. Upper Saone, 6 miles E. of Vesoul, and 9 SW. of Lure.

2. NOROY LE SEC, in the dep. of Moselle, 6 miles W. of Briey, and 15 SW. of Thionville.

NORRIDGEWALK, or NORRIDGEWORK, a town of the United States, in Maine, in Lincoln county, on the Kennebeck; so named from an Indian town on the Kennebeck, which was destroyed by Col. Harman in 1724. It lies 10 miles W. of Canaan, 239 N. by E. of Boston, and 587 NE. of Philadelphia.

NORRIESTOWN, a village of Perthshire, in the parish of Kincardine, joined to that of THORNHILL, on a rising ground on both sides of the road between Stirling and the fort of Innersnaid, in Dunbartonshire. The population of both in 1792 was 626.

(1.) NORRIS, John, a learned English divine and Platonic philosopher, born in 1657 at Collingborne-Kingston, in Wilts, of which his father Mr John Norris was then minister. He was bred first at Winchester school, afterwards at Exeter college, Oxford, where he was admitted in 1676; but was elected fellow of All Souls in 1680, and took the degree of A. B. He resided at his college, and had been in holy orders five years, when he was presented to the rectory of Newton St. Loe, in Somersetshire, 1689; upon which he married and resigned his fellowship. In 1691, his merit procured him the rectory of Bemerton, near Sarum, a living upwards of 200l. a year. He died in 1711, in his 55th year, at Bemerton.

(2.) NORRIS, or NORIS. See NORIS.

(3.) NORRIS, a town of Ireland, in Armagh.

NORRISTOWN, a town of Pennsylvania, capital of Montgomery county, seated on the N. bank of the Schuylkill; 20 miles NW. by N. of Philadelphia. It has a court-house, a handsome edifice of stone for the preservation of records, and an observatory; where the celebrated American philosopher Dr Rittenhouse lies interred near his old mansion house. (See RITTENHOUSE.) Lon. 75. 24. W. Lat. 40. 7. N.

NORROY KING AT ARMS. See KING, § iii. His office is to marshal and dispose the funerals of all the inferior nobility, as baronets, knights, esquires, and gentlemen, on the north side of the Trent.

NORRYS, a town of the Isle of Wight, in E. Medina.

NORS, a river of Sweden, in W. Gothland, which runs into Lake Wenner, 4 miles NE. of Galstra.

NORSE LANGUAGE, the language of the Norwegians.

NORSOE, a lake of Norway. See NORWAY, N° I. § 9.

(1.) NORT, a town of France, in the dep. of the Lower Loire; 15 miles N. of Nantes.

(2.) NORT, an island of Russia, in the Gulf of Finland; 44 miles W. of Revel.

NORTELGA, or NORTELGE, a sea port town of Sweden, in Upland, built by Gustavus Adolphus, in 1622. It was ravaged by the Russians in 1719. It has a manufacture of firearms. It is 30 miles NE. of Stockholm. Lon. 10. 32. E. Lat. 59. 44. N.

NORTGAU, or NORDGAW. See BAVARIA, § 6.

(1.) * NORTH. *n. s.* [*north*, Sax.] The point opposite to the sun in the meridian.—

More unconstant than the wind; who woos
Ev'n now the frozen bosom of the *north*;
And being anger'd puffs away from thence,
Turning his face to the dew dropping south.
Shak.

The tyrannous breathing of the *north*
Shakes all our buds from blowing. *Shak. Cymb.*

Fierce Boreas issues forth
T' invade the frozen waggon of the *north*. *Dryd.*

(2.) *The* NORTH is one of the four cardinal points of the world.

(3.) * NORTH. *adj.* Northern; being in the north.—This shall be your *north* border from the great sea to mount Hor. *Num.* xxxiv. 7.

(4.) NORTH, Dudley, lord, of the 3d baron of that accomplished family, was one of the finest gentlemen in the court of king James; but in supporting that character, dissipated and gamed away the greatest part of his fortune. In 1645, he appears to have acted with the parliament: and was nominated by them to be administrator of the admiralty, in conjunction with the great earls of Northumberland, Essex, Warwick, and others. He lived to the age of 85; the latter part of which he passed in retirement, and wrote a small folio of Miscellanies, in prose and verse, under this title, *A Forest promiscuous of several Seasons Productions:* in 4 parts, 1659.

(5.) NORTH, Dudley, lord, son of the former, was made knight of the bath in 1616, at the creation of Charles prince of Wales; and sat in many parliaments, till excluded by the prevailing party in that which condemned the king. From that period lord North lived privately in the country, and towards the end of his life entertained himself with books, and, as his numerous issue required, with economy; on which he wrote a little tract, called *Observations and advices œconomical*, 12mo. His other works are, Passages relating to the long parliament; The history of the life of Lord Edward North, the first baron of the family, addressed to his eldest son; and a volume of Essays.

(6.) NORTH, Francis, lord Guildford, lord keeper of the great seal in the reigns of Charles II. and James II. was a third son of the 2d Dudley lord North, baron of Kertling; and studied at St John's college in Cambridge, whence he removed to the Middle Temple. He acquired French, Italian, Spanish, and Dutch; and became not only a good lawyer, but was well versed in history, mathematics, philosophy, and music. He was afterwards made the king's solicitor general, and was chosen to represent the borough of Lynn in parliament. He succeeded Sir Hineage Finch in the post of attorney-general; and lord chief justice Vaughan, in that of lord chief justice of the common pleas. He was afterwards made keeper of the great seal; and in 1683 was created a baron, by the title of *Lord Guildford*. He died at his house at Wroxton in 1685. He wrote a philosophical Essay on music; a paper on the gravitation of fluids, considered in the bladders of fishes, printed in Lowthorp's abridgment of the *Philos. Trans.* and some other pieces.

(7.) NORTH

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(7.) NORTH, Frederick, E. of Guildford, lord North, &c. was born April 13. 1732; and married, May 20. 1756, Miſs Ann Speke, an heireſs of the ancient family of Dillington in Somerſetſhire, by whom he left two ſons and three daughters: the eldeſt ſon George Auguſtus, born Sept. 11. 1757, and married, Sept. 30. 1785, to Miſs Hobart. Frederick ſucceeded his father Aug. 4. 1790. His lordſhip ſucceeded the celebrated Mr Charles Townſend as manager of the houſe of commons and chancellor of the exchequer; and in 1770, on the reſignation of the duke of Grafton, was made firſt lord of the treaſury; in which office he continued until the cloſe of the American war, or rather until the formation of the Rockingham miniſtry, which began the buſineſs of peace with the colonies He was a man of ſtrong mental faculties; and as an orator, at once commanded attention and enforced conviction; but taking the helm at a time when the king's party were unpopular, and when it was ſuppoſed that the earl of Bute was the great machine by which the cabinet was moved, ſo he continued in that ſtate of unpopularity until he reſigned the ſeals. During the whole of his premierſhip (and to conduct the helm at that time required uncommonly great abilities) he ſtudiouſly avoided impoſing any taxes that ſhould materially affect the lower claſs of people. As a financier, he ſtood high, even in the opinion of oppoſition; and they were a combination of all the great talents in the kingdom: but he was fatally wedded to the deſtructive plan of ſubduing the republican ſpirit of the Americans. His lordſhip was one of the firmeſt and moſt ſtrenuous ſupporters of the conſtitution in church and ſtate. He died on the 5th of Auguſt 1792. His recollection he retained to his laſt moments. Perhaps no man was ever more generally beloved by all who had acceſs to him than the earl of Guildford. The univerſity of Oxford paid the utmoſt honour to his remains.

(8.) NORTH, George, F. A. S. a learned divine and antiquarian, born in London, in 1707, and educated at St Pauls ſchool; whence he went to Bennet's college, Cambridge, where he became A. M. In 1731, he publiſhed An Anſwer to a ſcandalous Libel, entitled *The Impertinence and Impoſture of modern Antiquaries diſplayed*. This recommended him to the Society of Antiquaries, who admited him a member, and he was ſoon after appointed vicar of Cadicot, in Herefordſhire, where he died June 27th, 1772, aged 65. He publiſhed *A Table of Engliſh ſilver coins from the Conqueſt to the Commonwealth, with remarks*.

(9.) NORTH, John, D. D. the 4th ſon of the 2d Dudley lord North, (N° 5.) and brother to Lord Francis, (N° 6.) was born Sept. 4th, 1645. He ſtudied grammer at St Edmund's bury, and was admitted of Jeſus College, Cambridge, in 1661; where he became conſpicuous for his learning in the Greek and Hebrew languages. Having taken his degrees of A. M. and D. D. and been admitted fellow of his college, he took orders, and preached his firſt public ſermon before K. Charles II. at Newmarket, which was printed at Cambridge in 1671. In 1672 he was choſen profeſſor of Greek at Cambridge. He was made Clerk of the Cloſet to the king, and inſtalled a prebendary at Weſtminſter; and on Dr Barrow's death ſucceeded him as Maſter of Trinity College. He died in 1683, aged 38.

(10.) NORTH, in geography, a department of France, comprehending the ci-devant provinces of FRENCH FLANDERS, FRENCH HAINAULT and CAMBRESIS. It is bounded on the N. by the German Ocean, NE. by the dep. of the Lys; E. by thoſe of the Gemappes, and the Sambre and Meuſe; S. by that of the Aiſne; and W. by that of the Straits of Calais. It is 90 miles long from NW. to SE. and from 12 to 24 broad; though in one part of the diſtrict of Liſle, at Armentieres, near that of Hazebrouck, it is hardly 2 miles broad. DOUAY is the capital.

(11.) NORTH, a river of Maſſachuſetts, which flows from Indian Head pond, in Plymouth county, and falls into the Atlantic at Scituate. It is remarkable for narrowneſs and depth, being in ſeveral places not 60 feet broad, yet ſo deep that veſſels of 300 tons burden are built at Pembroke, 8 miles above its mouth.

(12.) NORTH, a river of N. Carolina, which riſes in Paſquotank county, and running ſeveral miles SE. falls into the Albemarle Sound.

To NORTH, *v. n.* To ſail Northward. See NAVIGATION.

NORTHADSTEDE, a town of Holſtein, 8 miles NE. of Meldorp.

NORTHALBEN, a town of Franconia, in Bamberg.

NORTHALLERTON, a borough of Yorkſhire, in the North Riding, on a rivulet which runs into the Wiſk. It is a well built trading town, and has a market on Wed. It is 30 miles NNW. of York, 34 S. of Durham, and 223 N. by W. of London. Lon. 1. 20. W. Lat. 54. 23. N.

NORTH AMERICA. See AMERICA, § 9—14; 15—54. MEXICO, N° 1.—7; and UNITED-STATES.

NORTHAMPSTEAD, a town of New York, in Long Iſland, capital of Queen's county, 20 miles E. of Brooklyn.

(1.) NORTHAMPTON, or NORTHAMPTONSHIRE, a county of England, ſituated in the very heart of the kingdom: bounded on the E. by the counties of Bedford and Huntingdon; on the S. by thoſe of Buckingham and Oxford; on the W. by Warwickſhire; and on the N. by the counties of Leiceſter, Rutland, and Lincoln, which are ſeparated from it by the Leſſer Avon, and the Welland. Its greateſt length is about 50 miles, its greateſt breadth about 20, and its circumference about 130. It contains 330 pariſhes. There are in it one city and 11 market towns. Nine members are returned to parliament for this county, viz. two knights for the ſhire, two for the city of Peterborough, two for each of the towns of Northampton and Brockly, and one for Higham Ferrers. It lies in the Mid-land circuit, and in the dioceſe of Peterborough. Being dry, well cultivated, free from marſhes, except the fens about Peterborough, in the centre of the kingdom, and of courſe at a diſtance from the ſea, it enjoys a very pure and wholeſome air. In conſequence of this it is very populous, and ſo full of towns and churches, that many ſpires or ſteeples may be ſeen in many places, at one view; and even in the fens, the

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the inhabitants ſeem to enjoy a good ſtate of health, and to be little affected by the water which frequently overflows their grounds, eſpecially in winter, but is never ſuffered to remain long upon it. Its ſoil is exceeding fertile both in corn and paſturage; but it labours under a ſcarcity of fuel, as it doth not produce much wood, and, by lying at a diſtance from the ſea, cannot be eaſily ſupplied with coal. Its commodities, beſides corn, are ſheep, wool, black cattle, and ſalt-petre; and its manufactures are ſerges, tammies, ſhalloons, boots, and ſhoes. Beſides many leſſer brooks and ſtreams, it is well watered by the Nen, Welland, Ouſe, and Leam; the three firſt of which are large, and for the moſt part navigable. By the general cenſus taken in June, 1801, this county contained 26,585 houſes; 63,276 males, and 68,154 females; in all 131,430 ſouls.

(2.) NORTHAMPTON, a town of England, capital of the above county. According to Camden, it was formerly called NORTH-AFANDON, from its ſituation to the N. of the river Nen, called anciently *Aufona*, by which and another leſſer river it is almoſt incloſed. Dr Gibſon ſays, that the ancient Saxon annals called both it and Southampton ſimply *Hamton*; and afterwards, to diſtinguiſh them, called the one, from its ſituation, *Southamton*, and the other *Northamton*; but never *North-afandon*. Though it does not appear to be a place of very great antiquity, nor to have emerged from obſcurity till after the conqueſt, it has ſent members to Parliament ſince the reign of Edward I. and being in the heart of the kingdom ſeveral parliaments have been held at it. There was alſo a caſtle, and a church dedicated to St Andrew, built by Simon de Sancto Licio, commonly called *Senlis*, the firſt earl of Northampton of that name. It was burnt down during the Daniſh depredations; but in the reign of St Edward it appears to have been a conſiderable place. It was beſieged by the barons in their war with King John; at which time that military work called *Hunſhill*, is ſuppoſed to have been raiſed. In the time of Henry III. it ſided with the barons, when it was beſieged and taken by the king. Here the bloody battle was fought in which Henry VI. was taken priſoner. See ENGLAND, § 33. It was entirely conſumed by a moſt dreadful fire in 1675; yet, by the help of liberal contributions from all parts of the country, it hath ſo recovered itſelf, that it is now one of the neateſt and beſt built towns of the kingdom. Among the public buildings, which are all lofty, the moſt remarkable are the church called *All-hallows* (which ſtands at the meeting of four ſpacious ſtreets), the ſeſſions and aſſize houſe, and the George-Inn. A county hoſpital or infirmary has been lately built here. It was formerly walled, and had ſeven churches within and two without. The walls were about two miles in circuit. The horſe market is reckoned to excel all others in the kingdom, it being deemed the centre of all its horſe-markets and horſe-fairs, and the chief rendezvous of the jockies both from York and London. Its principal manufacture is ſhoes, of which great numbers are ſent beyond ſea; and the next to that, ſtockings and lace. It is rich and populous, being a thorough-fare both in the N. and W. roads; but, being 80 miles from the ſea, it can have no commerce by navigation. It contains about 1083 houſes, and 5200 inhabitants. It had formerly a nunnery with ſeveral monaſteries; and of its very old caſtle on the W. ſide of the town, a ſmall part of the ruins are ſtill to be ſeen. The horſe races are on a neighbouring down, called *Pye-Leys*. Within half a mile of the town is one of the croſſes erected by King Edward I. in memory of his Queen Eleanor, whoſe corpſe was reſted there in its way to Weſtminſter. On the N. ſide of the river, near that croſs, many Roman coins have been ploughed up. At Guileſborough, NW. of Northampton, are to be ſeen the veſtiges of a Roman camp, the ſituation of which is the more remarkable as lying between the Nen and the Avon, the only paſs from the N. to the S. parts of England not intercepted by any river. This camp was ſecured only by a ſingle intrenchment, which was, however, very broad and deep. Northampton is governed by a mayor, aldermen, recorder, and burgeſſes; and has three weekly markets on Wed. Frid. and Sat. It lies 30 miles SE. of Coventry, 43 NE. of Oxford, 50 W. of Cambridge, and 66 NNW. of London. Lon. 1. 11. W. Lat. 52. 15. N.

(3.) NORTHAMPTON, a county of N. Carolina, in Halifax diſtrict; bounded on the N. by Virginia, E. by Hartford, S. by Bertie, SW. by Halifax, and W. by Warren counties. It contained 5553 citizens, and 4409 ſlaves in 1795.

(4.) NORTHAMPTON, a town of Maſſachuſetts, capital of Hampſhire county, 1¼ mile W. of the Connecticut, 40 N. of Hartford, 100 of Boſton, and 271 from Philadelphia. It had 1628 citizens in 1795.

(5.) NORTHAMPTON, a townſhip of New Jerſey in Burlington county, comprehending 56,000 acres, and containing above 150 houſes, an epiſcopal church and a quaker's meeting houſe: 20 miles from Philadelphia, and 22 from Trenton. Mount Holy is the capital.

(6.) NORTHAMPTON, an extenſive hilly county of Pennſylvania, bounded on the E. and NE. by the Delaware, which ſeparates it from the ſtates of New Jerſey and New York, SE. by Bucks, SW. by Berks and W. and NW. by Luzerne counties. It is 111 miles long from N. to S. and 53 broad; and contains 27 townſhips; with mines of iron ore, coals, and limeſtone. Eaſton is the capital.

(7.) NORTHAMPTON, a town in the above county, (N° 6.) on the SW. bank of the Lehigh, 6 miles SW. of Bethlehem.

(8.) NORTHAMPTON, a townſhip of Pennſylvania in Buck's county.

(9.) NORTHAMPTON, a county of Virginia, forming the S. part of the peninſula on the E. coaſt of Virginia, on Cheſapeake bay. It contained 3645 citizens, and 3244 ſlaves, in 1795.

NORTHAMPTONSHIRE. See NORTHAMPTON, N° 1.

NORTH BERWICK. See BERWICK, N° 9, 10.

NORTH BERWICK LAW. See BERWICK, N° 11.

NORTHBOROUGH, a townſhip of Maſſachuſetts in Worceſter county; 10 miles E. of Worceſter and 36 W. of Boſton: containing 619 citizens in 1795.

NORTHBRIDGE, a townſhip of Maſſachuſetts,

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45 miles SW. of Boſton; containing 569 citizens in 1795.

NORTH BRITAIN. See CALEDONIA and SCOTLAND.

NORTH CAPE, the moſt northerly promontory in Europe, on the coaſt of Norway. Lon. 21. 0. E. Lat. 78. 0. N.

NORTH CAROLINA, See CAROLINA, N° 1.

NORTH CASTLE, a townſhip of New York in Cheſter county, containing 2478 citizens in 1796. It is 20 miles from Ridgefield.

NORTH COASTS. See COTES, N° 6.

NORTH CURRY, a conſiderable town of England, in Somerſetſhire, with markets on Tueſ. and Sat. on the Tone; 20 miles SW. of Wells, and 134 W. by S. of London. Lon. 3. 0. W. Lat. 51. 0. N.

NORTH DOWN, ſands of Ireland, on the coaſt of Wicklow, Leinſter.

(1.) * NORTHEAST. *n. ſ.* [*noordeaſt*, Dutch.] The point between the north and eaſt.—John Cabot, a Venetian, the father of Sebaſtian Cabot, in behalf of Henry VII. of England, diſcovered all the *north-eaſt* coaſts hereof, from the Cape of Florida in the ſouth, to Newfoundland and Terra de Labrador in the north. *Heyl.*—The inferiour ſea towards the ſouth-eaſt, the Ionian towards the ſouth, and the Adriatic on the *north-eaſt* ſide, were commanded by three different nations. *Arbuthnot.*

(2.) NORTH-EAST, a river of Charleſtown, which runs into the head of Cheſapeake Bay, 5 miles below Charleſtown, abounding with herrings.

(3.) NORTH EAST PASSAGE, a paſſage to the Eaſt Indies along the northern coaſts of Aſia, which, like the NORTH WEST PASSAGE, hath often been attempted, but hitherto without ſucceſs. To enumerate all the attempts which have been made to diſcover a north-eaſt paſſage would, ſwell this article to very little purpoſe. The Engliſh, Dutch, and Danes, have all attempted it without ſucceſs. The laſt voyage from England for this purpoſe was made in 1676, under the patronage of James duke of York. That unfortunate prince, who was on all occaſions earneſt for the promotion of commerce, and the Lord Berkely, &c. fitted out a ſhip, commanded by Captain Wood, for an attempt once more to find a north-eaſt paſſage to India, accompanied with a ſhip of the king's. They were encouraged to this attempt, after it had been ſo long deſpaired of, by ſeveral new reports and reaſonings; ſome of which ſeem not to have been very well grounded. But this attempt proved very unfortunate. They doubled the North Cape, and came among much ice and drift wood, in Lat. 76° N. ſteering to the coaſt of Nova Zembla, where the king's ſhip ſtruck upon the rocks, and was ſoon beat to pieces; and captain Wood returned home with an opinion, "that ſuch a paſſage was utterly impracticable, and that Nova Zembla is a part of the continent of Greenland." Theſe paſſages, however, are not yet deemed impracticable by all. The Count de Buffon holds it for certain, that there is a paſſage from Europe to China by the north ſea. The reaſon why it has been ſo often attempted in vain, he thinks, is, that fear prevented the undertakers from keeping at a ſufficient diſtance from land, and from approaching the pole, which they probably imagined to be an immenſe rock. Hence he affirms, that if any farther attempts be made to find a paſſage to China and Japan by the north ſeas, it will be neceſſary to keep at a diſtance from the land and the ice; to ſteer directly towards the pole; and to explore the moſt open ſeas, where unqueſtionably, ſays he, there is little or no ice. This opinion has been lately revived by the Hon. Daines Barrington, who ſays, that if the paſſage be attempted by the pole itſelf, he has very little doubt of its been accompliſhed. See POLE, NORTH.

(4.) NORTH EAST TOWN, a townſhip of New York, in Ducheſs county, 90 miles NW. of New York; containing 3401 citizens in 1790, and 391 electors in 1796.

NORTHEIM, a rich town of Brunſwick, which is ſeated on a well frequented paſſage between the Rhume and the Leine, and carries on a great trade: 45 miles S. of Hanover. Lon. 7. 10 E. Lat. 51. 42. N.

* NORTHERLY. *adj.* [from *north*.] Being towards the north.—The *northerly* and ſoutherly winds, commonly eſteemed the cauſes of cold and warm weather, are really the effects of the cold or warmth of the atmoſphere. *Derham.*

(1.) * NORTHERN. *adj.* [from *north*.] Being in the north —

Proud *northern* lord, Clifford of Cumberland. *Shak.*

—If we erect a red-hot wire until it cool, and hang it up with wax and untwiſted ſilk, where the lower end which cooled next the earth doth reſt, that is the *northern* point. *Brown.*

(2.) NORTHERN ARCHIPELAGO. See ARCHIPELAGO, N° 2; KAMTSCHATKA, § 9; and the iſlands mentioned under theſe articles in their order.

(3.) NORTHERN ISLES of Scotland, See ORKNEY, and SHETLAND.

(4.) NORTHERN LIGHTS, the ſame with AURORA BOREALIS. See AURORA, N° II, § 1—5. Wiſhing to lay before our readers every thing important in ſcience or literature, we cannot omit a hypotheſis which Dr Stearns, an American, formed, about 1788, to account for the appearances called *aurora borealis*, and *aurora auſtralis*. The Doctor ſuppoſes that theſe phenomena originate from aqueous, nitrous, ſulphureous, bituminous, and other exhalations, from the fumes of various kinds of earths or other minerals, vegetables, animals, fires, volcanoes, &c. Theſe, he thinks, become rarified, and being charged with electrical fluid, become ſpecifically lighter than the circumambient air: hence, of courſe, they aſcend; and being elevated to the upper regions of the air, and driven by the winds from warmer to colder climates, the cold makes them combine and ſtiffen. When they are afterwards agitated by different currents of air, they ſparkle and crackle like the hairs of cats and other animals when ſtiffened with cold. This coruſcation in quite cold atmoſpheres, and in thoſe which are more temperate, appears in different poſitions in the

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the horizon, zenith, or otherwiſe, according to the ſituation of the ſpectator, and the poſition of the elevated exhalations. The difference of colours he ſuppoſes to ariſe from the different qualities of the articles combined, thoſe of the moſt inflammable nature ſhining with the greateſt luſtre. The Doctor likewiſe tries to account for theſe lights not appearing, or but ſeldom, in ancient times. The atmoſphere, he thinks, was not impregnated with materials proper to produce them. He imagines that the increaſed conſumption of fuel, in America in particular, the burning of volcanoes, and the approach of blazing ſtars, whoſe atmoſpheres have been ſo expanded by the ſun's heat that part of them have fallen into the earth's atmoſphere, and communicated to it new matter, have ſo changed and prepared our air, that whenever its conſiſtence is proper, then if the light of the ſun and moon is not too powerful, the aurora borealis will appear. The hypotheſes of thoſe, however, who, aſcribe theſe phenomena to electricity, appear much more credible. See AURORA, N° II, § 3; and ELECTRICITY, *Index*.

NORTH ESK. See ESK, N° 5. and 7.

NORTH FERRY, or NORTH QUEEN'S FERRY, a ſmall village, of Fifeſhire, on the N. ſide of the Frith of Forth, oppoſite Queen's-Ferry. There was here formerly a chapel, ſerved by the monks of Dunfermline, and endowed by Robert I. Near it are large granite quarries, which partly ſupply London with paving ſtones, and employ many veſſels for the conveyance. "The granite (Mr Pennant ſays) lies in perpendicular ſtrata, and above is a reddiſh earth, filled with micaceous friable nodules." It had 312 inhabitants in 1793.

(1.) NORTHFIELD, a flouriſhing town of Maſſachuſetts, in Hampſhire county, on the E. bank of the Connecticut, 30 miles N. of Northampton and 100 NW. by W. of Boſton; containing 868 citizens in 1795. It was incorporated in 1673, but deſolated by the Indians a few years after. It was rebuilt in 1685, but again deſtroyed by the Indians. It was rebuilt a 3d time in 1713.

(2.) NORTHFIELD, a townſhip of New Hampſhire, in Rockingham county, on the E. bank of the Merrimack; incorporated in 1780, and containing 606 citizens in 1795.

(3.) NORTHFIELD, a townſhip of New York, in Richmond county, Staten Iſland; containing 1021 inhabitants, including 133 electors, and 133 ſlaves.

(4.) NORTHFIELD, a townſhip of Vermont, in Orange county, 25 miles W. of Newbury.

NORTHFLEET, a ſmall town of Kent, on the Thames, one mile W. of Graveſend, and 21 from London. Great quantities of lime are made in it, curious foſſils have been dug up.

NORTH FORELAND. See FORELAND, N° 2.

NORTH HAMPTON, a townſhip of New Hampſhire, in Rockingham county; containing 657 citizens in 1795.

NORTH HAVEN, a townſhip of Connecticut, in New Haven county, ſeated on the river Eaſt; 8 miles N. by E. of New Haven, and 32 S. by W. of Hartfield. It was the birth place of the learned Dr Ezra Stiles, late preſident of Yale college.

NORTH HEMPSTEAD, a townſhip of New York, in Orange county, Long Iſland; containing 2189 citizens, and 507 ſlaves in 1790, and 232 electors in 1796.

(1.) NORTH ISLAND, an iſland on the coaſt of S. Carolina, at the mouth of the Great Pedee. Lon 79 3. W. Lat. 33. 10. N.

(2.) NORTH ISLAND, an iſland in the N. Pacific Ocean. Lon. 133 10. W. Lat 54. N.

NORTH KINGSTOWN a town of Rhode Iſland, in Waſhington county, which carries on a conſiderable trade in the fiſheries and with the W. Indies; 10 miles from Newport, and 300 from Philadelphia.

NORTHLEECH, a town of England, in Glouceſterſhire, with a grammar ſchool, ſeveral almshouſes, and a market on Wed. 25 miles E. of Glouceſter, and 80 W. by N. of London. Lon. 1. 43. W. Lat. 51. 46. N.

NORTHLINED LAKE, a large lake of N. America, 160 miles S. of Cheſterfield inlet; 80 miles long and 25 broad. It abounds with iſlands. Lon. 98. 30. E Lat. 60. 40. N.

NORTHMAVEN, a pariſh of Scotland, in Orkney, ſo named from *Maven*, a peninſula on the S. of it, which joins it to Mainland. The pariſh itſelf is alſo a peninſula, 24 miles long from S. to N. and 12 broad. Its coaſts, however, are much interſected with inlets and harbours called *Voes*; and ſurrounded with iſlands, rocks, and natural pillars. One of theſe is ſo high that it has never been trodden by man, and is hence called the *Maiden Skerrie*. All theſe romantic rocks are frequented by wild birds. It is waſhed on the E. by the Yell Sound; S. by St Magnus Bay, where it has a good harbour; N. and W. by the Atlantic. The climate is equal, mild, and temperate; the air pure and healthy in all ſeaſons. The winters are milder than in any other part of Britain, but high winds are frequent. The aurora borealis often illuminates the whole horizon. The ſoil is rather barren, but produces black oats and barley. Services and petty taxes are exacted. Sheep and horſes live on ſea weeds in winter. The population, in 1792, was 1786; increaſe 777 ſince 1755. Fiſhing, wherein 65 boats are employed, and making of kelp, are the chief employments. The men are robuſt, tall, and long-lived; the horſes little, but hardy. The exports of fiſh, oil, beef, hides, tallow, butter, ſtockings, gloves, kelp, ſeal ſkins, &c. amount to 3880l. a-year.

NORTH MOUNTAIN, a ridge of the ALLEGANY MOUNTAINS, which extend through Pennſylvania and Virginia. There is a curious ſyphon fountain on it, which turns a corn mill.

NORTHORN, a town of Germany, in the circle of Weſtphalia, and county of Bentheim, on the Vechte; 8 miles N. of Bentheim.

NORTHORP, a town of N. Wales in Flintſhire; where large potteries of earthen wares, bricks, &c. are carried on. In 1157, the troops of Henry VII. were here defeated by the Welch, with great ſlaughter, under the ſons of Owen Gwynedd. It is 11½ miles WNW. of Cheſter, and 193 NW. of London.

NORTH POLE. See POLE.

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NORTH-PORT, a township of the United States, in Maine, Hancock county.

NORTH PROVIDENCE, a town of Rhode Island, in Providence county on the Patucket. It has several cotton and iron manufactories; and contained 1100 citizens, in 1795. It is 4 miles NE. of Providence.

(1.) NORTH RIVER, a considerable river of N. America, which rises in the N. part of New Mexico, and running SE. falls into the W. end of the gulf of Mexico.

(2.) NORTH RIVER, a river of New York.

(3.) NORTH RIVER, a river of Virginia, a branch of the Fluvanna.

(4, 5.) NORTH RIVER. See NORTH, N° 11, 12.

NORTH ROCKS, (otherwise called *Patrick's rocks*, from a seat of stone amongst them called *St Patrick's chair*,) rocks of Ireland, in the harbour of Donaghadee, county of Down, and prov. of Ulster. From N. to S. they are about two thirds of a league, between which is clean good ground. But care must be taken of the S. rock, on which many ships have perished: for it is overflowed by every tide, and no crew can save their lives if the wind blows high. This rock stands a full mile from the shore.

NORTH SALEM, a township of New York, in W. Chester county. In 1790, it contained 1000 citizens and 58 slaves; and in 1796, 162 electors.

NORTH SEA, that part of the ATLANTIC, which lies *North* of England and Ireland. The name is sometimes also applied to the GERMAN OCEAN, or that part of the Atlantic which is North of the Downs and mouth of the Thames.

NORTH SOUND POINT, the projecting point of land on the NE. coast of Antigua.

* NORTHSTAR. *n. s.* [*north* and *star*.] The pole-star; the lode-star.—If her breath were as terrible as her terminations, there were no living near her, she would infect the *north star*. *Shak.*

NORTH-TOWN, a town of England, in Staffordshire, near King's Bromley.

NORTH UIST. See UIST.

(1.) NORTHUMBERLAND, the most northerly county of England, and formerly a distinct kingdom, is bounded on the N. and W. by the Tweed, which divides it from Scotland, the Cheviot hills, and part of Cumberland; washed on the E. by the German Ocean; and separated from Durham on the S. by the Tyne and Derwent. This county extends about 66 miles in length from N. to S. and 47 in breadth from E. to W. It contains 12 market towns, 280 villages, and 460 parishes. The face of the country, especially towards the west is roughened with huge mountains, the most remarkable of which are the Cheviot hills, and the high ridge called *Ridesdale*; but the lands are level towards the sea side and the borders of Durham. The climate, like that of every other mountainous country near the sea, is moist and disagreeable: the air, however, is pure and healthy, being well ventilated by breezes and strong gales of wind; and in winter mitigated by the warm vapours from the two seas, the Irish and the German Ocean, between which it is situated. The soil varies in different parts of the county. Among the hills it is barren; though it affords good pasture for sheep, which cover those mountains. The low country, when properly cultivated, produces plenty of wheat and all sorts of grain; and great part of it is laid out in meadows and rich inclosures. Northumberland is well watered with many rivers, rivulets, and fountains; its greatest rivers are the TWEED and the Tyne. The mountains of Northumberland are supposed to contain lead ore and other metals, as they in all respects resemble those parts of Wales and Scotland where lead mines have been found. But the inhabitants are diverted from inquiries of this nature, by the certain profits and constant employment they enjoy in working the coal pits, with which this county abounds. The city of London, and the greatest part of England are supplied with fuel from these stores of Northumberland, which are inexhaustible, enrich the proprietors, and employ an incredible number of hands and shipping. About 658,858 chaldrons are annually shipped for London. There are no natural woods of any consequence, but many plantations near the seats of noblemen and gentlemen. Pot-herbs, roots, salads, and every article of the kitchen-garden and orchard, are raised in great plenty, as are also apricots, peaches, and nectarines. The spontaneous fruits it produces in common with other parts of Great Britain, are crab apples, sloes, hazel nuts, brambleberries, juniperberries, wood strawberries, cranberries, and bilberries. Northumberland raises a great number of excellent horses and black cattle, and affords pasture for numerous flocks of sheep; both the cattle and sheep are of a large breed, but the wool is coarser than that which the more southern counties produce. The hills and mountains abound with red deer, foxes, hares, rabbits, heathcocks, grouse, partridges, quails, plovers, teals, and woodcocks. The sea and rivers are well stocked with fish; especially the Tweed, in which a vast number of salmon is caught and carried to Tinemouth where being pickled, they are conveyed by sea to London, and sold under the name of *Newcastle Salmon*. A great number of Roman monuments have been found in this county; but the most remarkable curiosity of that kind consists in the remains of Hadrian's vallum and the wall of Severus. See ADRIAN'S WALL and SEVERUS'S WALL. The most noted towns in Northumberland, are Newcastle, Morpeth, Alnwick, Berwick, Hexham, and North Shields. It sends two members to parliament. The total population of this county, as stated in the return to parliament 26th June 1801, was 163,468; the number of males, 76,223; of females, 87,245; and of houses, 578. ALNWICK is the county town.

(2.) NORTHUMBERLAND, a town of New Hampshire, in Grafton county, on the E. bank of the Connecticut, at the mouth of the Amonoosick.

(3.) NORTHUMBERLAND, a county of Pennsylvania, bounded on the N. by Lycoming, E. by Luzerne, and on the S. and W. by Dauphiné and Mifflin counties. It contained 16 townships, 17,072 citizens, and 89 slaves, in 1795. The capital is Sunbury.

(4.) NORTHUMBERLAND, a flourishing town in

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in the above county (N° 3.) at the junction of the E. and W. branches of the Susquhannah, 2 miles N. by W. of Sunbury.

(5.) NORTHUMBERLAND, a county of Virginia, bounded E. by Chesapeake Bay, S. by Lancaster, W. by Richmond, N. by Westmoreland counties, and NE. by the Potomac. It 40 miles long and 25 broad, and contained 4643 citizens, and 4460 slaves in 1795.

(6.) NORTHUMBERLAND ISLANDS, a chain of islands near the NE. coast of New Holland. Lon. 149° to 150° 20' E. Lat. from 22° 28' to 22° 26' N.

NORTHUMBRIANS, the natives of Northumberland. They were anciently stigmatised as a savage, barbarous people, addicted to cruelty, and inured to rapine. The truth is, before the union of the two crowns of England and Scotland, the borderers on each side were extremely licentious and ungovernable, trained up to war from their infancy, and habituated to plunder by the mutual incursions made into each kingdom; incursions which neither truce nor treaty could totally prevent. People of a pacific disposition, who proposed to earn their livelihood by agriculture, could not remain in a country exposed to the violence of a bold and desperate enemy; therefore the lands lay uncultivated, and in a great measure deserted by every body but lawless adventurers, who subsisted by plunder and rapine. There was a tract, 50 miles in length and 6 in breadth, between Berwick and Carlisle, known by the name of the *Debateable Land*, to which both nations laid claim, though it belonged to neither; and this was occupied by a set of banditti who plundered on each side, and what they stole in one kingdom, they sold openly in the other: nay, they were so dexterous in their occupation, that by means of hot bread applied to the horns of the cattle which they stole, they twisted them in such a manner, that, when the right owners saw them in the market, they did not know their own property. Wardens were appointed to guard the marches in each kingdom; and these offices were conferred on noblemen of the first character for influence, valour, and integrity. The English border was divided into three marches, called the *east*, *west*, and *middle marches*; the gentlemen of the county were constituted deputy-wardens, who held march-courts, regulated the watches, disciplined the militia, and took measures for assembling them in arms at the first alarm: but in the time of peace they were chiefly employed in suppressing the insolence and rapine of the borderers. Since the union of the crowns, however, Northumberland is totally changed, both with respect to the improvement of the lands, and the reformation of the inhabitants. The grounds being now secure from incursion and insult, are settled by creditable farmers, and cultivated like other parts of the kingdom. As hostilities have long ceased, the people have forgot the use of arms, and exercise themselves in the more eligible avocations of peace; in breeding sheep and cattle, manuring the grounds, working at the coal-pits, and in different branches of commerce and manufacture. In their persons they are generally tall, strong, bold, hardy, and fresh-coloured; and though more polished than their ancestors, not quite so civilized as their southern neighbours. The commonalty are well fed, lodged, and clothed; and all of them remarkably distinguished by a kind of *shibboleth* or *whurle*, from a particular way of pronouncing the letter *R*, as if they hawked it up from the wind-pipe, like the cawing of rooks. In other respects, the language they speak is a mixture of the English and Scottish dialects. There is no material distinction between the fashionable people of Northumberland and those of the same rank in other parts of the kingdom: the same form of education will produce the same effects in all countries. The gentlemen of Northumberland, however, are remarkable for their courage, hospitality, and hard drinking.

(1.) * NORTHWARD. *adj.* [*north* and *weard*, Saxon.] Being towards the north.

(2.) * NORTHWARD. } *adv.* [*north* and *weard*.]
* NORTHWARDS. } Towards the north.—

Mistake me not for my complexion;
Bring me the fairest creature *northward* born,
Where Phœbus' fire scarce thaws the icicles,
And prove whose blood is reddest. *Shak.*

—Going *northward* aloof, as long as they had any doubt of being pursued, at last they crossed the ocean to Spain. *Bacon.*—

Northward beyond the mountains we will go,
Where rocks lie cover'd with eternal snow.
Dryden.

—A close prisoner in a room 20 feet square, being at the north side of his chamber, is at liberty to walk 20 feet southward, not to walk 20 feet *northward*. *Locke.*

(1.) NORTH WATER, or NORTH ESK. See ESK, N° 7.

(2.) NORTH-WATER BRIDGE, a village of Scotland, in Forfarshire, at the old bridge over the North Esk, 4 miles N. of Montrose; containing about 70 people in 1793.

(1.) NORTHWEST. *n. s.* [*north* and *west*.] The point between the north and west.—The bathing places, that they may remain under the sun until evening, be exposed unto the summer setting, that is *northwest*. *Brown's Vulgar Errours.*

(2.) NORTH-WEST COAST OF AMERICA, the name given to the country on the NW. part of the continent of America, lying on the Pacific Ocean. This extensive country has the appearance of one continued forest abounding with pines, alder, birch, bazle, brushwood, and other trees, producing gooseberries, currants, raspberries, and various other fruits. It is inhabited by numerous tribes of Indians, independent of each other, and differing in language, customs, &c. They appear to subsist chiefly by hunting and fishing. The country abounds with otters, racoons, beavers, marmots, martins, &c. whose skins are the chief articles of commerce between the natives and Europeans. Copper, ginseng, oil, &c. are also procured. Between 1785 and 1788, there had arrived at Canton in China from this coast 9 vessels of different nations. The coast abounds with a vast number of islands. Among these are QUEEN CHARLOTTE'S ISLAND, NOOTKA, Port Mulgrave, the peninsula of ALASHKA, &c. &c. Above 50 of these have been visited by European navigators from France, Spain, Russia, and

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and Britain; and the natives appeared very friendly. Mr Etches, who fitted out ships from England a few years ago, concluded that the North-West coast of America, from Lat. 48° to 47° N. is not one continued tract of land, but a chain of islands. In 1787, Capt. J. Kendrick, of the Columbia, carried on a profitable traffic with the natives for furs; and purchased a tract of their country comprehending 340 miles square, for his employers.

(3.) NORTH-WEST PASSAGE, a supposed passage to the Pacific Ocean through Hudson's Bay or Davis's Straits, the discovery of which hath been frequently attempted without success; notwithstanding which, many are still of opinion that it is practicable. The idea of a passage to the East Indies by the north pole, or through some opening near to it, was suggested as early as 1527, by Robert Thorne, a merchant of Bristol. In 1557, Sir Martin Forbisher sailed to 62° lat. N. where he discovered the straits which bear his name. In 1607, Henry Hudson was sent, at the expense of some merchants in London, to discover a passage by the north pole to Japan and China. He sailed from Gravesend on the 1st of May, and on the 21st of June fell in with the land to the westward, in lat. 73°, which he named *Hold-with-hope*. On the 27th he discovered Spitsbergen, and met with much ice. The highest latitude in which he made an observation was 80° 27'. See HUDSON, N° 1. In March 1609, Jones Poole was sent by Sir Thomas Smith, and the rest of the Muscovy company, to make further discoveries towards the north pole. After great severity of weather, and many difficulties from ice, he made the S. part of Spitsbergen on the 16th of May; and sailing along and sounding the coast, he made many accurate discoveries; but was not in that voyage able to proceed beyond 79° 50'. He was again employed (1611), in a small vessel called the *Elisabeth*, to attempt the north-west passage; but after surmounting numberless difficulties, and penetrating to 80° lat. N. he lost his ship at Spitsbergen. Two voyages, equally unsuccessful, were made in 1614 and 1615, by Baffin and Fotherby; the latter of whom concludes the account of his discoveries and dangers, with exhorting the company who employed him, not to adventure more than 150*l.* or 200*l.* at most on yearly voyages to these seas. Hitherto nothing had been done in this great undertaking but by private adventurers, fitted out for the double purpose of discovery and private advantage; and the polar regions remained unexplored in that direction from 1615 till 1773, when Captain Phipps, afterwards Lord Mulgrave, undertook the voyage by his Majesty's desire and penetrated to 80° 37'; but could proceed no farther, as he was there opposed by one continued plain of smooth unbroken ice, bounded only by the horizon. Many other attempts have been made to discover this passage, by sailing along the western coast of America; but hitherto without success. So early as 1579, Sir Francis Drake assured queen Elisabeth, that he had sailed some leagues up the straits of Anian (See ANIAN), and discovered New Albion, to the N. of California; but the strait is now known to have no existence; and Drake's real discoveries were not improved. In 1630, king Charles I. sent captain Luke Fox in one of his pinnaces to attempt the passage; but of his proceedings we know nothing, but that he reached Port Nelson in Hudson's Bay, where he found some remains of former navigators. Next year captain James was fitted out by the merchants of Bristol for the same purpose. James was one of the ablest navigators that ever sailed from England or any other country; and his voyages to the north were printed in 1663. After all the experiments he had made, he concluded that there was no such passage; or if there be, he affirmed that the discovery of it would not be attended with those advantages which are commonly expected. His reasons, however, for these opinions have been answered, and many subsequent attempts have been made to perform what he thought impossible. The arguments for a north-west passage were so plausible, that in 1774 an act of parliament was passed to encourage the discovery of it. Among many others, captain Cook attempted the discovery in vain, and thence adopted James's opinion. (See COOK, N° III, § 7, 11.) This celebrated navigator, after having proceeded northwards to the western extremity of America, and ascertained the proximity of the two great continents of Asia and America, returned to the Sandwich islands, firmly persuaded of the impracticability of a passage in that hemisphere from the Atlantic into the Pacific Ocean, either by an eastern or a western course. Later voyagers, however, have pretended to detect some errors in Cook's discoveries; and the author of a small tract, entitled *An authentic Statement of all the Facts relative to Nootka Sound*, goes a great way to make the discovery not yet hopeless. In his account of the expedition under the direction of Messrs Etches, he says, that "one of the first discoveries made by these ships was, that what was by the immortal Cook laid down as a continuation of the north-west continent of America, and lying between the northern latitudes of 48° and 57°, is on the contrary an extensive cluster of unexplored islands inhabited by numerous tribes of friendly Indians, with whom a regular connection was formed." These islands they discovered, contrary to the assertion of Captain Cook, to conceal the opening of a vast inland sea, or archipelago, in all probability equal to the Mediterranean or Baltic seas, and dividing the great northern continent of America. The Princess Royal penetrated some hundred leagues among them in a NE. course, to within 200 leagues of Hudson's house, but had not then an opportunity to explore the extreme termination of that archipelago, their commercial concerns obliging them to return to the China market; but the commanders had the strongest reasons to believe, had time favoured their survey, that they should have been able to discover the long wished-for passage between the Atlantic and South Sea. They conceived, that should neither the inland arm of the sea through which the Princess Royal penetrated, nor a large strait named *Sir Charles Middleton's*, about three degrees to the southward, be found to reach across the continent, yet that the land barrier must be very inconsiderable; and that at the extremity of this bay a practicable passage, either by rivers

or

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or lakes, will, by perſeverance, be found terminating towards Hudſon's Bay. Upon the whole, however, it appears extremely doubtful whether there be ſuch a paſſage; but it is much more likely to be diſcovered, if diſcovered at all, by the progreſſive advances of mercantile enterpriſe, than by any expedition expreſsly undertaken for that purpoſe.

(4.) NORTH-WEST RIVER, a river of North Carolina, formed by the junction of Haw and Deep rivers, which falls into the Clarendon. It is 300 yards broad at Aſhwood, and has petrified trees on its banks.

(1.) NORTH-WESTERN, *adj.* belonging to the North-Weſt.

(2.) NORTH-WESTERN TERRITORY, or TERRITORY NORTH-WEST OF THE OHIO, an extenſive country of N. America, comprehending all that part of the United States which lies NW. of the Ohio. It is ſituated between 81. 8. and 91. 8. Lon. W. and between 37° and 50° Lat. N. Its greateſt length, according to the Rev. Dr Morſe, is about 900 miles, and its greateſt breadth 700: but Mr Joſeph Scott, in his *United States Gazetteer*, makes its length from SE. to NE. about 1170 miles, and its greateſt breadth from N. to S. about 800: while Dr Brookes and John Walker ſtate its total contents at 11,000 ſquare miles; but Dr Morſe makes it no leſs than 411,000. It is totally omitted in Mr Cruttwell's Gazetteer. This extenſive territory is bounded on the N. by part of the northern boundary line of the United States; on the E. by Pennſylvania and the lakes; on the S. by the Ohio; and on the W. by the Miſſiſippi. Its total contents are eſtimated at 263,040,000 acres; of which 43,040,000 are water. Hence there remain 220 millions of acres belonging to the Federal Government, to be ſold for the extinction of the national debt; except a narrow ſtrip of land bordering on the S. of lake Erie, and ſtretching 120 miles W. of the W. limit of Pennſylvania, which belongs to Connecticut. Only a ſmall part of this territory is as yet purchaſed from the native Indians by Congreſs, in terms of the treaty of 1795; when goods to the value of 20,000 dollars were delivered to the Indians; and an annual delivery of goods to the value of 9500 dollars was agreed to by the United States. When the whole territory is purchaſed and ſettled, it is to be divided into five States, to be added to the Union. The part already ſettled, by citizens of the American republic, is divided into 5 counties, viz. WASHINGTON, erected in 1788; *Hamilton*, ST CLAIR, and *Knox*, in 1790; and WAYNE, in 1796. Theſe are organiſed with proper officers, civil and military. There are alſo ſettlements at *Marietta*, at the mouth of the Muſkingum, under the Ohio Company; at Galliopolis, and between the two Miamis, under Col. Symmers; beſides ſeveral other places. The chief rivers are the Muſkingum, Hockhocking, Sciota, Great and Little Miami, Great Kanhanay, Blue and Wabaſh, which fall into the Ohio; the Au Vaſe, Illinois, Ouiſconſing, Kaſkaſkias, and Chippeway, &c. which fall into the Miſſiſippi; the St Lewis, Kennoomic, St Joſeph, Barbue, Grand, Miami of the Lakes, Sandniſky, Cayahoga, and many others which run into the lakes. Between the Illinois and the Kaſkaſkias, which are 84 miles ſeparate, there is an extenſive tract of level rich land, which ends in a high ridge 15 miles from the Illinois, and on which are a great number of French villages, which, with thoſe of St Lewis and St Genevieve, on the W. bank of the Miſſiſippi, contained about 2200 citizens in 1800. The territory abounds with various uſeful minerals, coals, free-ſtone, lime-ſtone, lead and iron ores; a ſilver mine, numerous ſalt ſprings, excellent white and blue clay for graſs and earthen wares, &c. The ſurface is everywhere pleaſant and healthy; the hills gentle and ſwelling; the ſoil conſiſts of all varieties, but in general is very fertile, producing naturally great quantities of grapes, of which excellent wine is made; a great variety of trees, particularly maple or ſugar trees, ſycamores, elms, oaks of all kinds; mulberry, hiccory, walnut, cherry, cheſnut, butternut, ſaſſafras, aſh, aſpin, papaw, locuſt, lime, cucumber, and various kinds of apple, pear, and plumb trees, &c.; and by cultivation, wheat, rye, corn, indigo, tobacco, cotton, &c. The woods abound with all kinds of game; wild cattle, deer, bears, wolves, buffaloes, partridges, pheaſants, ducks, ſwans, turkeys, &c. are exceedingly numerous. The population of this territory is not aſcertained, but was eſtimated, in 1800, at about 84,000, of whom 65,000 are Indians. The climate is uncommonly excellent and healthy, and ſprings of excellent water abound everywhere. A temporary government was eſtabliſhed by Congreſs in 1787, under a governor and three judges, appointed by Congreſs; a general aſſembly, conſiſting of the governor and legiſlative council of five; and a houſe of repreſentatives, elected by the citizens, in the proportion of one for every 500 males. When any of the five ſtates, into which this territory is to be divided, ſhall have 60,000 citizens, it ſhall be admitted into the Union of the States, and ſhall be entitled to ſend delegates to the Congreſs, on an equal footing with the original States, and to form a permanent republican conſtitution for itſelf. And in the mean time it is a fixed article in the preſent temporary government, that "no perſon ſhall ever be moleſted on account of his mode of worſhip, or religious ſentiments;" and that "there ſhall be neither *ſlavery* nor involuntary ſervitude in the ſaid territory."—The forts and poſts of protection on the frontiers are forts Lawrence, Wayne, Recovery, Franklin, Harmar, Stuben, Fayette, Hamilton, Knox, Jefferſon, St Clair, Mariatta, and St Vincennes. Among the antiquities of this country there are many ancient forts, moſtly of an oblong form, and overgrown with wood, from the age of which it is ſuppoſed that theſe forts cannot be leſs than 1000 years old. But not a relic of tradition is preſerved concerning them.

NORTHWICH, or NORTHWICK, a ſmall town of Cheſhire, long celebrated for its rock-ſalt and brine pits. The ſtratum of ſalt lies about 40 yards deep; and ſome of them are hollowed into the form of a temple. The deſcent is through a dome, the roof ſupported by rows of pillars about two yards thick, and ſeveral in height; and when illuminated with a ſufficient number of candles, they make a moſt magnificent appearance. Above the ſalt is a bed of whitiſh clay *(argilla cærula-cinerea)*, uſed in making the Liverpool earthen

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earthen ware; and in the same place is also dug a good deal of gypsum, or plaster-stone. The fossil salt is generally yellow, and semipellucid, sometimes debased with a dull greenish earth; and is often found, but in small quantities, quite clear and colourless. The town is situated near the Dane, and is tolerably handsome: it has a market on Friday. It is 20 miles NE. of Chester, and 173 NW. of London. Lon. 2. 36. W. Lat. 53. 16. N.

(1.) * NORTHWIND. *n. s.* [*north* and *wind*.] The wind that blows from the north.—

The clouds were fled,
Driven by a keen *northwind*. *Milton.*
When the fierce *northwind*, with his airy forces,
Rears up the Baltick to a foaming fury. *Watts.*

(2.) *The* NORTH WIND is generally accompanied with a considerable degree of cold. It sometimes blows with almost irresistible fury. It is often mentioned by the classic authors under the name of *Boreas*. See BOREAS.

NORTHWOOD, a township of New Hampshire, in Rockingham county, containing 744 citizens in 1795. Crystal and crystalline spar are found in it. It is 39 miles NW. of Portsmouth.

NORTH YARMOUTH, a town of Maine, in Cumberland county; 140 miles NE. of Boston, and 484 from Philadelphia. Lon. 4. 55. E. of that city. Lat. 43. 47. N.

NORTH YELL. See YELL, N° 2.

NORTIA. the goddess of Fortune among the ancient Etrurians. *Liv.* vii. 3.

(1.) NORTON, or CHIPPING NORTON, a borough of Oxfordshire, with a good market on Wednesday for corn, cattle, &c. 12 miles SW. of Banbury, and 74 NW. of London. Lon. 1. 17. W. Lat. 51. 55. N.

(2.) NORTON, a town of Cheshire, 4 miles from Warrington, with a good modern alms-house, founded by P. Brook, Esq. on the site of a priory of canons regular of St Augustine, founded by William, son of Nigellus, A. D. 1135, who did not live to complete his design: for Eustace de Burgaville granted to Hugh de Catherine pastures for 100 sheep, in case he finished the church in all respects conformable to the intent of the founders. It was granted afterwards to R. Brook, Esq.

(3.) NORTON, a town in the NE. of Cape Breton.

(4.) NORTON, a township of Massachusetts, in Bristol county, 33 miles S. of Boston; incorporated in 1711, and containing 1428 citizens in 1795. It has manufactures of ochre and nails.

(5.) NORTON, a town of S. Carolina, 22 miles SSE. of Columbia.

(6.) NORTON, a township of Vermont, in Essex county, on the Canada line between Holland on the W. and Canaan on the E.

(7.) NORTON, Thomas, an English lawyer and poet, born in Bedfordshire. He assisted Sternhold and Hopkins in their translation of the Psalms. In conjunction with Thomas Sackville he wrote a dramatic piece, entitled *Ferrex and Porrex*; which was reprinted under the title of *Gorboduc*; from heroes of these names in Geoffrey of Monmouth's fabulous history of Britain. He died in 1584.

(8.) NORTON, John, a writer in the reign of Charles II. who published a curious work, entitled, *The Scholar's Vade-Mecum*, in which he endeavoured to alter the orthography of the English language; but which, like all similar attempts, proved abortive.

(9.) NORTON SOUND, or } an inlet of the sea,
(9.) NORTON'S SOUND, } on the W. coast of N. America, discovered in Capt. Cook's last voyage, and so named in honour of Sir Fletcher Norton, Lord Grantley. It extends as far as 64° 55′ Lat. N. There is no good station for ships, nor even a tolerable harbour, in all the sound. Mr King, on his landing here, discerned many spacious valleys, with rivers flowing through them, well wooded, and bounded with hills of a moderate height. One of the rivers towards the NW. seemed to be considerable; and he supposed, from its direction, that it discharged itself into the sea from the head of the bay. Some of his people, penetrating beyond this into the country, found the trees to be of a larger size the further they proceeded. Lon. 197. 13. W. Lat. 64. 31. N. Dr Brookes places it in Lon. 162. 47. W. Mr Cruttwell in 161° to 164°.

NORTSEE GROTE, a town of Holstein.

NORVENICH, a town of France, in the dep. of the Roer, and late duchy of Juliers; 7 miles E. of Dueren.

NORVI, a town of Sardinia, 18 miles NE. of Saffari.

NORUM, a town of Sweden, in W. Gothia.

NORWALK, a town of Connecticut, in Fairfield county, on the N. side of Long Island Sound. It has 2 churches, several mills, and iron works; and carries on a good trade with New York and the West Indies. It is 13 miles W. by S. of Fairfield, and 34 NE. of New York. Lon. 73. 47. W. Lat. 41. 9. N.

(1.) NORWAY, a country of Europe, lying between the 57° and 72° of Lat. N. and between the 5° and 31° of Lon. E. from London; extending in length about 1000 miles, in a direct line from Lindesnes, in the diocese of Christiansand, to the North Cape, at the extremity of Finmark. Its breadth, from the frontiers of Sweden westward to Cape Statt, amounts to about 300 miles; but from thence the country becomes gradually narrower towards the N.

(2.) NORWAY, BOUNDARIES, SURFACE, &c. OF. Norway is bounded on the S. by the Schagen rock, or Categate, the entrance into the Baltic; on the E. it is divided from Sweden by a long ridge of high mountains; and on the W. and N. it is washed by the northern ocean. In the S. part of Norway, the country is craggy, abrupt and mountainous, diversified sometimes with fertile and even delightful spots. In these respects it resembles Switzerland: the prospects and the meteorological phenomena seem to be very similar. The range of the thermometer is of great extent; in the summer having risen to 88°, and in the winter fallen to 40°: in general it is between 80° and 22°.

(3.) NORWAY, CLIMATE OF. The climate is very different in different parts of the kingdom. At Bergen the winter is so moderate, that the seas are always open and navigable both by mariners and fishermen, except in creeks and bays that reach far up into the country towards Fin-

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field. On the E. side of Norway, from the frontiers of Sweden to Filefield, the cold generally sets in about the middle of October with great severity, and lasts till the middle of April: during which interval the waters are frozen to a very considerable thickness, and the face of the country is covered with snow. In 1719, 7500 Swedes, who intended to attack Drontheim, perished in the snow on the mountain of Ruden or Tydel, which separates Jemptland in Sweden from the diocese of Drontheim. The cold is still more intense in that part of Norway called FINMARK, situated in the frigid zone, near the polar circle. But if the winter is generally cold, the summer is often excessively hot, in Norway. The rays of the sun are reverberated from the sides of the mountains, so as to render the weather close and sultry in the valleys: besides, the sun's absence below the horizon is so short, that the atmosphere and mountains have not time to cool. The heat is so great, that vegetation is remarkably quick. Barley is sown, grows, ripens, and is reaped, in six weeks or two months. The longest day at Bergen consists of 19 hours; the sun rising at half an hour after two, and setting at half an hour after nine. The shortest day does not exceed six hours; the sun rises at nine A. M. and sets at three P. M. In the depth of winter, therefore, it is for some weeks invisible; and all the light perceived at noon is a faint glimmering for about an hour and an half, proceeding from the reflection of the sun's rays from the highest mountains. But the inhabitants of these provinces are supplied with other lights, that enable them to follow their employments in the open air. The sky being generally serene, the moonshine is remarkably bright, and, being reflected from the mountains, illuminates the valleys. They are also assisted by the AURORA BOREALIS, which is very frequent in the northern parts of Europe. The air of Norway is generally pure and salubrious. On the sea-coasts, indeed, it is rendered moist by vapours and exhalations; but in the midland parts of the country, towards the mountains, the climate is so dry, that meal may be kept for many years without being wormeaten or damaged in the least. The inhabitants have no idea of sickness, except what is occasioned by excess. It is said, that in the vale of Guldbrand the inhabitants live to such extreme old age, that they become weary of life, and cause themselves to be removed to a less salubrious climate, whereby they may have a chance of dying the sooner. In consumptions, the moist air on the sea-side is found to be most agreeable to the lungs in respiration. Norway, being a mountainous country, intersected by creeks, abounding with lakes, rivers, and snow, must be subject to frequent rains; and from sudden thaws the inhabitants are sometimes exposed to terrible disasters. Vast masses of snow, falling from precipices, overwhelm men, cattle, boats, houses, nay, even whole villages. Above 200 years ago, a whole parish was covered and destroyed by an immense mass of snow; and several domestic utensils, as scissars, knives, and basons, have been at different times brought to light by a rivulet that runs under the snow, which has been gradually hardened and increased by repeated frosts and annual accessions. The winds that chiefly prevail on the W. coast are those that blow from the S.; whereas, on the other side of Filefield, the winds that produce and continue the hard frosts are always northerly. In the summer, there is a kind of regular trade-wind on the coast of Bergen. In the forenoon the sea begins to be cooled with a westerly breeze, which continues till midnight. Then the land breeze begins from the E. and blows till about 10 A. M. The coast is likewise subject to sudden squalls and storms. Hurricanes sometimes rise at sea; and in these latitudes the phenomenon called a *water-spout* is not uncommon. One of these in the neighbourhood of Ferro is said to have sucked up with the water some lasts of herrings, which were afterwards dropped on Kolter, a mountain 1200 feet high. The fresh water of Norway is generally turbid, and deposits a sediment of adventitious matter, being sometimes impregnated with ochre or particles of iron; and yet it is agreeable to the taste, and remarkably salubrious, as appears from the good health of the common people, who drink little or no other liquor.

(4.) NORWAY, COAST OF. The coast of Norway, extending above 300 leagues, is studded with a multitude of small islands, affording habitation to fishermen and pilots, and pasture to a few cattle. They form an infinite number of narrow channels, and a natural barrier of rocks, which render Norway inaccessible to the naval power of its enemies. The shore is generally bold, steep, and impending; so that close to the rocks the depth of the sea amounts to 100, 200, or 300 fathoms. The perils of the north sea are moreover increased by sudden storms, sunk rocks, violent currents, and dreadful whirlpools. The most remarkable vortex on this coast is called MOSKOESTROM, or *Maelstrom*. See MAELSTROM. There are three vortices of the same kind near the islands of Ferro.

(5.) NORWAY, DIVISIONS OF. This kingdom in general is divided into Northern and Southern.

i. NORWAY, NORTHERN, is a long narrow slip of land, extending as far as Cape North, beyond 71° Lat. N. and bounded on the W. and N. by the Northern Ocean; on the E. by Swedish and Russian Lapland; and S. by Sweden. It is divided into NORDLAND and FINMARK. (See these articles.) The latter, called also the province of WARDHUYS, extending to the North Cape, and including the islands, is divided into two parts; namely, Finmark and Norwegian Lapland. The chief town, which is very inconsiderable, stands upon the island WARD, whence the name.

ii. NORWAY, PROPER, or SOUTHERN, is bounded on the NE. by Sweden; on the S. and W. by the Northern Ocean. It is divided into four provinces or governments, viz. Aggerhuys or Christiania, Christianland, Bergenhuys, and Drontheim. That of BAHUS, a narrow tract, 90 miles long, on the coast of the Categate, is now subject to Sweden. The province of AGGERHUYS comprehends the SE. part of Norway, extending in length about 300 miles. Its chief towns are Christiania, the see of a bishop suffragan to the metropolitan see of Drontheim, where the sovereign court of justice is held, in presence of the viceroy and the governor of the

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province; Aggerhuys, about 15 miles SW. of Chriſtiania; Frederickſhall or Frederickſtadt, in the ſiege of which Charles XII. of Sweden loſt his life; Saltzberg, Tonſberg, Alleen, Hammar, and Hollen. The province of BERGENHUYS lies in the moſt ſouthgrly and weſterly part of Norway, including the city (ſee BERGEN, N° 1.), and Staffhanger, ſituated in the bay of Buckenfior, about 80 miles S. of Bergen. The province of Drontheim, or Trontheim, extends about 500 miles along the coaſt, and is but thinly peopled. The chief town, Drontheim, ſeated on a gulf at the mouth of the Nider, is the only metropolitan ſee in Norway. (See DRONTHEIM, N° 1.) Leetſtrand, Stronden, Scoerdale, Opdal, Romſdael, and Solendael, are alſo places of ſome trade. The N. diviſion of Drontheim, called the ſub-government of SALTEN, contains the towns of Melanger and Schoen.

(6.) NORWAY, GENERAL HISTORY OF. Alſtedius ſays, that the kingdom of Norway was founded by *Gotho*, in the year 800, and that it was firſt united with that of Denmark, under one monarch, by the great Margaret, daughter of Waldemar III. (See DENMARK, § 6; and MARGARET, N° 4.) He does not, however, give us any ſeries of its monarchs during that period; ſome of whom are mentioned in his hiſtories of the other northern kingdoms, particularly SCOTLAND and SWEDEN. "Our firſt certain knowledge of the inhabitants of this country (ſays Pennant) was from the deſolation they brought on the ſouthern nations by their piratical invaſions. Their country had before that period the name of NORTMANNSLAND, and the inhabitants NORMANS; a title which included other adjacent people. Great Britain and Ireland were ravaged by them in 845; and they continued their invaſions till they (and the Danes) effected the conqueſt of England, under their leaders Olaus and Canute the Great." (See ENGLAND, § 16.) "They went up the Seine as far as Paris, burnt the town, and forced its weak monarch to purchaſe their abſence at the price of 14,000 marks. They plundered Spain, and at length carried their excurſions through the Mediterranean to Italy, and even into Sicily. They uſed narrow veſſels, like their anceſtors the Sitones; and, beſides oars, added the improvement of two ſails; and victualled them with ſalted proviſions, biſcuit, cheeſe, and beer. Their ſhips were at firſt ſmall; but in after times they were large enough to hold 100 or 120 men. But the multitude of veſſels was amazing. The fleet of Harold Blaatand conſiſted of 700:—100,000 of theſe ſavages have at once ſailed from Scandinavia, ſo juſtly ſtyled *Officina gentium, aut certè velut vagina nationum.* Probably neceſſity, more than ambition, cauſed them to diſcharge their country of its exuberant numbers. Multitudes were deſtroyed; but multitudes remained, and peopled more favourable climates. Their king, Olaus, was a convert to Chriſtianity in 994: Bernard, an Engliſhman, had the honour of baptizing him, when Olaus happened to touch at one of the Scilly iſlands. He plundered with great ſpirit during ſeveral years; and in 1006 received the crown of martyrdom from his pagan ſubjects. But religious zeal firſt gave the reſt of Europe a knowledge of their country and the ſweets of its commerce. The Hanſe towns poured in their miſſionaries, and reaped a temporary harveſt. By the year 1204, the merchants obtained from the wiſe prince Sueno every encouragement to commerce; and thus introduced wealth and civilization into his barren kingdom. England by every method cheriſhed the advantages reſulting from an intercourſe with Norway, and Bergen was the emporium. Henry III. in 1217, entered into a league with its monarch Haquin; by which both princes ſtipulated for free acceſs for their ſubjects into their reſpective kingdoms, free trade, and ſecurity to their perſons. In 1269, Henry entered into another treaty with Magnus, in which it was agreed, that no goods ſhould be exported from either kingdom except they had been paid for; and there is, beſides, a humane proviſion on both ſides, for the ſecurity of the perſons and effects of the ſubjects who ſhould ſuffer ſhipwreck on their ſeveral coaſts." *Arct. Zool.* By the union of Calmar, the kingdoms of Norway and Denmark were united under one monarch; and then the people of both nations enjoyed conſiderable privileges: but the Daniſh government ſoon became abſolute; and Norway was ruled deſpotically by a viceroy, who reſided in the capital, and preſided in the ſupreme court, to which appeals were made from ſubordinate courts of judicature. A great change has, however, taken place, ſince the preſent prince of Denmark had part of the government.

(7.) NORWAY, HOUSES, CHURCHES, &c. OF. The churches, public edifices, and many private houſes in Norway, are built of ſtone; but the people in general live in wooden houſes, made of the trunks of fir and pine-tree laid upon each other, and joined by mortiſes at the corners. Theſe are counted more dry, warm, and healthy, than ſtone or brick buildings. In the whole dioceſe of Bergen, one hardly ſees a farm-houſe with a chimney or window: they are generally lighted by a ſquare hole in the top of the houſe, which lets in the light, and lets out the ſmoke. In ſummer this hole is left quite open: in the winter, it is covered with what they call a *fiax*; that is, the membranes of ſome animal, ſtretched upon a wooden frame that fits the hole, and tranſmits the rays of light. It is fixed or removed with a long pole occaſionally. Every perſon who enters the houſe, upon buſineſs or courtſhip, takes hold of the pole, according to ancient cuſtom. The ceiling is about 8 feet high in the middle; and, being arched like a cupola, the ſmoke of the fire underneath rolls about, until it finds a vent from the hole, which is called *liur*. Under this opening ſtands a thick table with benches, and a high ſeat at the upper end for the maſter of the family: he has likewiſe a ſmall cupboard for his own uſe, in which he locks up his moſt valuable effects. The boards of the roof are coated with the bark of birch, which is counted incorruptible; this again is covered with turf, which yields a good crop of graſs for goats and ſheep, and is often mowed as hay by the farmer.

(8.) NORWAY, INHABITANTS AND MANNER OF LIVING IN. Many Daniſh, Engliſh, Scotch, Dutch, and German families have now ſettled in Norway, and indeed form no inconſiderable part of

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of the trading people: but the original inhabitants are the deſcendants of thoſe ferocious NORMANS who harraſſed almoſt all the coaſts of Europe with piratical armaments in the 8th, 9th, and 10th centuries. The inhabitants now ſpeak the ſame language that is uſed in Denmark, though their original tongue is the dialect now ſpoken in Iceland. They profeſs the Lutheran religion, under an archbiſhop eſtabliſhed at Drontheim, with four ſuffragans; viz. of Bergen, Staffanger, Hammer, and Chriſtiania. The Norwegians are generally well-formed, tall, ſturdy, and robuſt, brave, hardy, honeſt, hoſpitable, and ingenious; yet ſavage, raſh, quarrelſome, and litigious. Their women are well-ſhaped, tall, comely, remarkably fair, and obliging. The nobility of Norway have been chiefly removed by the kings of Denmark, to prevent faction and oppoſition to the court; others are degenerated into the rank of peaſants: ſome families, however, have been lately raiſed to that dignity. Every freeholder in Norway enjoys the right of primogeniture and power of redemption; and it is very uſual to ſee a peaſant inhabiting the ſame houſe which has been poſſeſſed 400 years by his anceſtors. The *odels gads*, or freehold, cannot be alienated by ſale or otherwiſe from the right heir, called *odels-mand:* if he is not able to redeem the eſtate, he declares his incapacity every 10th year at the ſeſſion; and if he or his heirs to the third generation ſhould acquire wealth enough for that purpoſe, the poſſeſſor *pro tempore* muſt reſign his poſſeſſion. The mountaineers acquire ſurpriſing ſtrength and dexterity, by temperance, cold, laborious exerciſe, climbing rocks, ſkating on the ſnow, and handling arms, which they carry from their youth to defend themſelves againſt the wild beaſts of the foreſt. Thoſe who dwell in the maritime parts of Norway exerciſe the employments of fiſhing and navigation and become very expert mariners. The peaſants of Norway are free, well lodged, ſpirited, active, frank, open, and undaunted, and have a great reſemblance to thoſe of Switzerland. Without being inſolent, they are never fawning, yet pay proper reſpect. "Their principal mode of ſalute," (ſays Mr Coxe) "is by offering their hand; and when we gave or paid them any trifle, inſtead of returning thanks by words or by a bow, ſhook our hand with great cordiality." They are their own hatters, ſhoemakers, tailors, tanners, weavers, carpenters, ſmiths, and joiners: they are even expert at ſhip-building; and ſome of them make excellent violins. But their general turn is for carving in wood, which they execute in a ſurpriſing manner with a common knife of their own forging. They are taught in their youth to wreſtle, ride, ſwim, ſkate, climb, ſhoot, and forge iron. Their amuſements conſiſt in making verſes, blowing the horn, or playing upon a kind of guitar, and the violin: this laſt muſic they perform even at funerals. The Norwegians have evinced their valour and fidelity in a thouſand different inſtances. The country was always diſtracted by inteſtine quarrels, which raged from generation to generation. Even the farmers ſtand upon the punctilio, and challenge one another to ſingle combat with their knives. On ſuch occaſions they hook themſelves together by their belts, and fight until one of them is killed or mortally wounded. At weddings and public feaſts they drink to intoxication, quarrel, fight, and murder generally enſues. The common people are likewiſe paſſionate, ambitious of glory and independence, and vain of their pedigree. The nobility and merchants of Norway fare ſumptuouſly; but the peaſant lives with the utmoſt temperance and frugality, except at feſtivals: his common bread is oatmeal cakes, like thoſe uſed in this country. In time of ſcarcity, they boil, dry, and grind the bark of the fir-tree into a kind of flour which they mix with oat-meal: the bark of the elm-tree is uſed in the ſame manner. In thoſe parts where a fiſhery is carried on, they knead the roes of cods with their oat-meal. Of theſe laſt, mixed with barley-meal, they make haſty-pudding and ſoup, enriched with a pickled herring or ſalted mackarel. Freſh fiſh they have in plenty on the ſea-coaſt. They hunt and eat grouſe, partridges, hares, red-deer, and rein-deer. They kill cows, ſheep, and goats, for their winter ſtock: theſe they pickle, or ſmoke, or dry for uſe. They make cheeſe of their milk; and a liquor called *ſyre* of their ſour whey: this they commonly drink mixed with water; but they provide a ſtore of ſtrong ale for Chriſtmas, weddings, chriſtenings, and other entertainments. From their temperance and exerciſe, joined to the purity of the air, they enjoy good health, and often attain to a ſurpriſing degree of longevity. Nothing is more common than to ſee a hearty Norwegian turned of 100. Nevertheleſs the Norwegians are ſubject to various diſeaſes; ſuch as the ſcab, leproſy, ſcurvy, catarrh, rheumatiſm, gout, and epilepſy. The dreſs of the Norway peaſants conſiſts of a wide looſe jacket made of coarſe cloth, with waiſtcoat and breeches of the ſame. Their heads are covered with flapped hats, or caps ornamented with ribbons. They wear ſhoes without outer ſoles, and in the winter leathern buſkins. They have likewiſe ſnow-ſhoes and long ſkates, with which they travel at a great pace, either on the land or ice. A corps of ſoldiers thus accoutered can out-march the ſwifteſt horſes. The Norwegian peaſant never wears a neckcloth, except on extraordinary occaſions: he opens his neck and breaſt, and lets the ſnow beat into his boſom. His body is girt round with a broad leathern belt, adorned with braſs plates, from which depends a braſs chain that ſuſtains a large knife, gimlet, and other tackle. The women are dreſſed in cloſe-laced jackets, having leathern girdles decorated with ornaments of ſilver. They likewiſe wear ſilver chains round their necks, to the ends of which are fixed gilt medals. Their caps and handkerchiefs are almoſt covered with ſmall plates of ſilver, braſs, and tin, large rings, and buttons. A maiden bride appears with her hair plaited, and, together with her cloaths, hung full of ſuch jingling trinkets.

(9.) NORWAY, LAKES AND CATARACTS OF. Norway abounds with freſh water lakes; the principal are, Ryſvand in Nordland, Snaaſen, Selboe, the Greater and Leſſer Mioes, Slirevand, Sperdille, Rand, Veſtn, Saren, Modum, Lund, Norſoe, Huidſoe, Fariſvand, and Oeyevand: all theſe are well ſtocked with fiſh, and navigable for

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large veſſels. Naval engagements have been formerly fought upon theſe inland ſeas; in ſome of which are ſmall floating iſlands, or parcels of earth, with trees on them, ſeparated from the main land, and preſerved in compact maſſes by the roots of trees, ſhrubs, and graſs, interwoven in the ſoil. In 1702, the family ſeat of Borge, near Frederickſtadt, a noble edifice, with lofty towers and battlements, ſuddenly ſunk into an abyſs 100 fathoms deep, which was inſtantaneouſly filled by a piece of water 300 ells in length, and about half as broad. Fourteen perſons, with 200 cattle, periſhed in this cataſtrophe, which was occaſioned by the Glaamen falling down a cataract near Sarp, and undermining the foundation. Of all the water-falls in Norway, this of SARP is the moſt tremendous for its height and rapidity. The current drives 17 mills; and roars with ſuch violence, that the water being daſhed and comminuted among the rocks, riſes in the form of rain, and always exhibits a beautiful rainbow when the ſun ſhines. In ancient times this cataract was made uſe of for the execution of traitors; who were thrown down alive, that they might be daſhed in pieces on the points of rocks, and die in a dreadful commotion, analogous to thoſe they had endeavoured to excite in the community.

(10.) NORWAY, MINERALS OF. A great diverſity of ſtones is found in Norway, ſome of which are of a ſurpriſing figure. Several mountains conſiſt chiefly of a brown pebble, which decays with age; nay, it ſometimes diſſolves, and drops into the ſea, and the cement being thus looſened, a terrible diſruption enſues. In ſome places the grey and black pebbles are intermixed with iron, copper, lead, ſilver, and gold. The ground in certain diſtricts is covered with the fragments of rocks that have been precipitated from the ſummits of mountains, and broken by their fall into innumerable ſhivers. Between 30 and 40 years ago, in the neighbourhood of Bergen, a man was ſuddenly overwhelmed with ſuch a maſs, which formed a kind of vault around him. In this dreadful tomb he remained alive for ſeveral weeks. By his loud cries the place of his confinement was diſcovered; but it was found impoſſible to remove the huge ſtones by which he was incloſed. All that his friends could do for him, was to lower meat and drink through ſome crevice; but at length the ſtones fell in, and cruſhed him to death. In Norway are inexhauſtible quarries of excellent marble, black, white, blue, grey, and variegated; together with many detached pieces of alabaſter, ſeveral kinds of ſpar, chalk-ſtone, cement-ſtone, ſand-ſtone, mill-ſtone, baking-ſtone, ſlate, talc, magnets, and ſwine-ſtone, a production natural to Norway and Sweden, of a brown colour, fetid ſmell, and in texture reſembling cryſtal: alſo the amianthus or ſtone flax, of which incombuſtible cloth may be made. (See AMIANTHUS.) Norway affords no flints, but plenty of pyrites or quartz, beautiful cryſtals, granites, amethyſts, agates, thunder-ſtones, and eagle-ſtones. Gold was formerly found in a ſmall quantity in the dioceſe of Chriſtianſand, and coined into ducats. There is a very conſiderable ſilver mine wrought at Kongſberg on the king's account; the ore is ſurpriſingly rich, but interrupted in ſuch a manner, that the vein is often loſt. Many maſſes of pure ſilver have been found; one piece weighing 560 lb. is preſerved in the royal muſeum at Copenhagen. Such is the richneſs of theſe mines, that the annual produce amounts in value to a ton and an half in gold. About 5000 people are daily employed in thoſe ſtupendous works, which, Mr Coxe ſays, produced formerly 70,000 l. a-year, but at preſent little more than 50,000 l. The mines of cobalt produce a clear profit of 16,000 l. a-year. Other ſilver mines are proſecuted at Jarlſberg, mixed with lead and copper. In many parts of this country copper mines have been diſcovered; but the principal and perhaps the richeſt in Europe, is at RORAAS, about 100 Engliſh miles from Drontheim. This work yields annually about 1100 ſhip pounds of pure copper; the founderies belonging to it conſume yearly about 14,000 laſts of coal and 500 fathoms of wood. The next in importance is the copper work at Lykken, about 20 miles from Drontheim. A 3d mine is carried on at Indſet, or Quickne, 30 miles from the ſame place; where they precipitate the copper from its menſtruum by iron. There is a 4th copper work, at Silboe, about 30 miles from Drontheim. Other copper mines of leſs note in different parts of the kingdom. Iron is ſtill in greater plenty, and was the firſt metal wrought in this country. Many hundred thouſand quintals are annually exported, chiefly in bars, and part of it in ſtoves, pots, kettles, and cannon: the national profit ariſing from this metal is eſtimated at 300,000 rix dollars. There is a ſpecies called *moor iron*, found in large lumps among the moraſſes: of this the peaſants make their own domeſtic tools and utenſils, ſuch as knives, ſcythes, and axes. The lead found mixed in the ſilver ore is an article of ſmall importance in Norway; yet ſome mines of this metal have been lately opened in the diſtrict of Soloer by the proprietors of the copper work at Oudal. A vitriol work has been begun near Kongſberg: the mines yield great plenty of ſulphur; which, however the Norwegians will not take the trouble to melt and depurate, becauſe immenſe quantities are found at a cheaper rate in Iceland. Alum is found between the ſlate flakes near Chriſtiania in ſuch plenty, that works have been ſet up for refining this mineral. The K. of Denmark has eſtabliſhed ſalt works in the peninſula of Valoe, about 6 miles from Tonſberg.

(11.) NORWAY, MOUNTAINS, CAVERNS, PRECIPICES, &c. OF. The great chain of mountains, running from N. to S. called indifferently *Rudfield*, *Sudefield*, *Skarsfield*, and *Scoreberg*, is known in different parts by other appellations, ſuch as *Dofrefield*, *Lamsfield*, *Sagnefield*, *Filefield*, *Halnefield*, *Hadangerfield*, *Joklefield*, *Byglefield*, *Hicklefield*, and *Hangfield*. The height and breadth of this extenſive chain likewiſe vary in different parts. To paſs the mountain Hardanger, a man muſt travel about 70 Engliſh miles, whereas Filefield is only about 50 over, and riſes about 2½ in perpendicular height. Dofrefield is counted the higheſt mountain of Norway, if not of Europe. The river Drivane winds along the ſide of it in a ſerpentine courſe, ſo as to be croſſed nine times by thoſe who travel the winter road to the other ſide of the

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the chain. The bridges are thrown over roaring cataracts, and but indifferently faſtened to the ſteep rocks on either ſide; ſo that the whole exhibits a very dreadful appearance, ſufficient to deter the traveller from hazarding ſuch a dangerous paſſage. Travellers therefore generally prefer the road over Filefield, though it is much more tedious. This, however, is the poſt-road uſed by the king's carriages, and is diſtinguiſhed by poſts fixed at the diſtance of 200 paces from each other, that, in ſnowy and dark weather, the traveller may not be bewildered. For reſt and refreſhment there are two houſes maintained on Filefield, and ſome upon other mountains, at the expence of the public, and furniſhed with fire, light, and kitchen utenſils. Nothing can be more diſmal and dreary than theſe mountains covered with eternal ſnow, where neither houſe, tree, nor living creature is to be ſeen, but here and there a ſolitary rein-deer, and a few wandering Laplanders. In travelling from Sweden to NORDENFIELDS, there is only one way of avoiding this chain of mountains; and that is, where it is interrupted by a long deep valley, extending from Romſdale to Guldbrandſdale. In 1612, a body of 1000 Scots, commanded by Sinclair, and ſent over as auxiliaries to the Swedes, were put to the ſword in this defile, by the peaſants of Guldbrand, who never give quarter. Beſides this chain, there is a great number of detached mountains all over the country, that form valleys and ridges, inhabited by the peaſants. Some of theſe are of incredible height, and others exhibit very remarkable appearances. The vaſt mountains and rugged rocks that deform the face of this country are productive of numberleſs inconveniences. They admit of little arable ground: they render the country in ſome parts impaſſable, and every where difficult to travellers: they afford ſhelter to wild beaſts, which come from their lurking holes, and make terrible havock among the cattle: they expoſe the ſheep and goats, as well as the peaſant, to daily accidents of falling over precipices: they occaſion ſudden torrents, and falls of ſnow, which deſcend with incredible impetuoſity, and often ſweep away the labours of the huſbandman: and they are ſubject to dreadful diſruptions, by which huge rocks are rent from their ſides, and, hurling down, overwhelm the plains below with inevitable ruin.

(12.) NORWAY, POPULATION OF. The population of Norway it is difficult to aſcertain to certainty. Mr Coxe ſays it amounts to 750,000 ſouls.

(13.) NORWAY, PRODUCTIONS OF. See § 3, 16, 17, 18.

(14.) NORWAY, REVENUE AND FORCES OF. The annual revenue exceeds 800,000 rix-dollars: Norway can produce above 14,000 excellent ſeamen; and the army amounts to 30,000 effective men.

(15.) NORWAY, RIVERS OF. The remarkable rivers of Norway are theſe: The NIED, iſſuing from Tydalen, on the borders of Sweden, runs weſtward into the lake Selboe; and afterwards, turning to the northward, paſſes by the city of Dronthcim, to which it anciently gave the names of NIDEROS and NIDROSIA; and falls into Drontheim Bay: *Sule Ely*, deſcending from Sulefield, runs with a rapid courſe through Nordale into the ſea: *Gulen* riſes near Sffarsfield in the north, and running 20 leagues W. through Aalen, Hlotaalen, Storen, and Melhuus, diſcharges itſelf into the ſea, about a league W. of Drontheim. In 1344, this river buried itſelf under ground; from whence it again burſt forth with ſuch violence that the earth and ſtones thrown up by the eruption filled the valley, and formed a dam; which, however, was ſoon broken and waſhed away by the force of the water. Several churches, 48 farm-houſes, with 250 perſons, were deſtroyed on this occaſion. OTTEROEN, a large river, taking its riſe from the mountain Agde, runs about 30 leagues through Seeterdale and Eſie, and falls into the cataract of Wiland. The SYRE riſes near the mountain Lang, and winds its courſe through the vale of Syre into the lake of Lunde in the dioceſe of Chriſtianſand; thence it continues its way to the ſea, into which it runs through a narrow ſtrait formed by two rocks. This contraction augments its impetuoſity, ſo that it ſhoots like an arrow into the ſea, in which it produces a very great agitation. NID and SHEEN are two conſiderable rivers, iſſuing out of Tillemark. Their water-falls have been diverted, with vaſt labour, by canals and paſſages cut through the rocks, for the convenience of floating down the timber. TYRESIORD, or *Dramme*, is in the neighbourhood of Honiſoſſe, joined by two rivers from Oedale, Bragneſs and Hadeland, and falls into the ſea near Bragneſs. *Loven* riſes in the higheſt part of Nummedal, and runs through Kongſberg to the ſea near Laurwig. *Glaamen* is the largeſt river of Norway, hence named *Stor Elven*, or the *great river*. It riſes from the mountain Dofre, whence it winds along the plains of Oeſterdale and Soloe; then joins the *Vorme*, another conſiderable river riſing out of Mioes and Guldbrandſdale. Theſe being united, traverſe the lake OEYEREN; and thence iſſuing, run on to Sarp near Frederickſtadt.

(16.) NORWAY, SOIL AND PRODUCE OF. The ſoil of Norway varies in different places according to the ſituation of rock or valley. The mountains, as in other countries, are bare and barren; but the earth waſhed down from them by the rains enriches and fertilizes the valleys. In theſe the ſoil generally conſiſts of black mould, ſand, loam, chalk, and gravel, lying over one another in unequal ſtrata, and ſometimes in 3 or 4 ſucceſſions: the uppermoſt mould is very fine and mellow, and fit to nouriſh all ſorts of vegetables. There is alſo clay in different parts of the kingdom, of which the inhabitants make earthen ware; but bricks and tiles are not uſed. The face of the country is in many places deformed by large ſwamps and marſhes, very dangerous to the traveller. Near Leeoſſoe in the dioceſe of Chriſtianſand, a wooden cauſeway is extended near a mile over a moraſs; and if a horſe or any other animal ſhould make a falſe ſtep, he will ſink at once into the abyſs, never to riſe again. In a cold country like Norway, roughened with rocks and mountains, interſperſed with bogs, and covered with foreſts, we cannot expect to find agriculture in perfection. The ploughed lands, in reſpect to mountains, woods, meadows, and waſtes, do not exceed the proportion of 1 to 80; ſo that the

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the whole country does not produce corn to maintain above half the number of its inhabitants. The peaſants are diſcouraged from the practice of huſbandry by the frequency of accidents peculiar to the climate. Even in the fruitful provinces of Guldbrandſdale, Oeſterdale, and Soloe, as well as in other places, when the corn appears in the moſt flouriſhing condition, the whole hope of the harveſt is ſometimes deſtroyed in one night by a ſudden froſt that nips the blade and extinguiſhes the vegetation. In ſome unfavourable years, in which the ſun ſeems to have loſt his genial power, the vegetables are ſtunted; the trees bud and bloom, yet bear no fruit; and the grain, though it riſes, produces nothing but empty ears and ſtraw. This calamity, however, rarely occurs; and in general the cultivated parts of Norway yield plentiful crops of excellent rye, barley, and oats. The moſt fruitful provinces are Nordland, Inderbarre, and Numedale, in the dioceſe of Drontheim; Sognifiord and Vaas, in that of Bergen; Jedderen, Ryefylſk, Raabygdelag, and the lordſhip of Nedenes, in the dioceſe of Chriſtianſand; Hedemark in the dioceſe of Aggerhuys; Hadeland, Toten, Romerige, Ringerige, and Guldbrandſdale: theſe, beſides producing grain enough for their own conſumption, likewiſe ſupply their neighbours, and even part of Sweden. Peaſe are alſo cultivated, together with wheat, buck-wheat, hops, hemp, and flax, but not to any great amount. The meadows are well ſtored with paſturage for ſheep and cattle, and the fields are productive of thoſe vegetables which are common in other northern countries. Within theſe 60 years the Norwegians have paid attention to the culture of gardens, which formerly were ſo neglected, that the towns were ſupplied with pot-herbs and roots from England and Holland. But they now raiſe their own roots and vegetables, which thrive as well as in any other country. The ſcurvy being a diſeaſe that prevails along the ſea coaſt, a variety of herbs grow ſpontaneouſly upon it, that are efficacious in the cure of that diſtemper; ſuch as angelica, roſe-wort, gentian, creſſes, trefoil, ſorrel, ſcurvy-graſs, and a plant called *erich's graſs*, that grows in great plenty on the iſlands of Northland; whence the people of the continent fetch away boat-loads of it, to be preſerved as a ſuccedaneum for cabbage. There are alſo a few noxious vegetables peculiar to Norway. In Guldbrandſdale is a ſpecies of graſs called *felſnape*, the root of which is ſo poiſonous, that any beaſt which eats of it dies immediately, the belly burſting; nay, the carnivorous fowls that prey upon the carcaſe of the beaſt meet with the ſame fate: children have been ſometimes poiſoned by this root, which nevertheleſs is uſed externally as an amulet for arthritic diſorders. Another vegetable pernicious to the cattle is the *Gramen offifragum Norwegienſe*, which is ſaid to mollify the bones of the cattle which feed upon it. Among the noxious plants of Norway we may alſo reckon the *igle-graſs*, fatal to ſheep and goats; the *tour-graſs*, which affects horſes and cows with a ſort of lethargy; and the *torboe*, or hiſte-ſpring, which produces nearly the ſame effect on horſes, but is not prejudicial to cows, ſheep, or any ruminating animals. The herb *turte*, not unlike angelica, operates nearly in the ſame manner: yet the bears feed upon it with peculiar reliſh; and when their hair begins to fall off by feeding upon this plant, they cure themſelves by eating the fleſh of animals. The common fruit-trees thrive tolerably well in Norway; the inhabitants have plenty of cherries, apples, and pears. Some kinds of plumbs attain maturity; but ſeldom grapes, apricots, or peaches. The apples and pears that ripen here are ſummer fruit; thoſe which grow till winter ſeldom come to perfection. Great variety of agreeable berries are produced in different parts of this kingdom; ſuch as the *bagebar*, a kind of ſloe; an infuſion of which in wine makes a pleaſant cooling liquor; juniper berries, corinths red and white, ſoelbar or ſun-berries, raſpberries, gooſeberries, blackberries, ſtrawberries, &c. with many other ſpecies that ſeem to be natives of Norway and Sweden. Among theſe are the *tranæbar*, the produce of the *myrtillus repens*, red and auſtere, found in ſpring in perfection under the ſnow, and much reliſhed by the rein-deer; *crakebeer*, reſembling bilberries, deemed a powerful antiſcorbutic; ager-beer, larger and blacker than bilberries, of a pleaſant acid, ripened by cold, and uſed as cherries for an infuſion in wine; and *tylte-beer*, a red pleaſant berry growing on a ſhort ſtem, with leaves like thoſe of box: they are plucked off by handfuls, and ſent to Denmark to be preſerved, where they are eaten by way of deſert. Of the trees that grow wild, the principal are the fir and the pine. The firſt yield an annual revenue of 1,000,000 of rix-dollars, if we include the advantages reſulting from the ſaw-mills and the maſts; one of which laſt has been known to ſell for 200 rix-dollars. The red fir-tree, which grows on the mountains, is ſo rich in turpentine as to be almoſt incorruptible. Some of the houſes belonging to the Norway peaſants, built of this timber, are above 400 years old. In Guldbrandſdale, the houſe is ſtill to be ſeen ſtanding in which king Olafus lodged five nights, above 700 years ago, when he travelled round the kingdom to convert the people to the Chriſtian faith. Even 100 years after the trunk of the fir-tree has been cut down, the peaſants burn the roots for tar, which is a very profitable commodity. In the fens, the roſin of the fire-tree is transformed into a ſubſtance which may be called *Norway frankincenſe*. The buds or pine-apples of this tree, boiled in ſtale beer, make an excellent medicine for the ſcurvy; more pleaſant to the taſte, and as efficacious, as tar-water. The pine-tree is more tall and beautiful than the fir, though inferior to it in ſtrength and quality: Norway likewiſe produces ſome foreſts of oak, which is excellent for ſhip-building. Elm trees are numerous; the bark of which, being powdered, is boiled up with other food to fatten hogs, and even mixed by the poor among their meal; alſo the aſh, from which the peaſants diſtil a balſam uſed in certain diſorders, and which is uſed both externally and internally. Hazels grow in ſuch abundance, that 100 tons of the nuts are annually exported from Bergen alone. See § 18.

(17.) NORWAY, TRADE AND MANUFACTURES, &c. OF. The Norwegians carry on a conſiderable trade with foreign nations. The duty on the produce of their own country exported amounts annually

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annually to 100,000 rix-dollars. These commodities are, copper, wrought and unwrought; iron, cast into cannon, stoves, and pots, or forged into bars; lead, in small quantity; masts, timber, deal-boards, planks, marble, mill-stones, herrings, cod, ling, salmon, lobsters, flounders, cow-hides, goat-skins, seal-skins, the furs of bears, wolves, foxes, beavers, ermines, martens, &c. down, feathers, butter, tallow, train-oil, tar, juniper and other sorts of berries, and nuts; salt, alum, glass, vitriol, and pot-ashes. All other commodities and articles of luxury the Norwegians import from different nations. Many are employed in grazing and breeding cattle: but a much greater number is engaged in felling wood, floating timber, burning charcoal, and extracting tar from the roots of the trees which have been cut down; in the silver, copper, and iron-mines; in the navigation and fishery. A considerable number of people earn a comfortable livelihood by hunting, shooting, and bird-catching. Every individual is at liberty to pursue the game, especially in the mountains and commons: therefore every peasant is expert in the use of fire-arms; and there are excellent marksmen among the mountains, who make use of the bow to kill those animals, whose skins, being valuable, would be damaged by the shot of fire-arms.

(18.) NORWAY, WOODS OF. Great part of Norway is covered with forests of wood, which constitute the principal article of commerce in this country. They chiefly consist of fir and pine, for which great sums are received from foreigners, who export an immense number of masts, beams, planks, and boards. An incredible quantity is also consumed at home, in building houses, ships, bridges, piles, moles, and fences; besides the vast demand for charcoal to the founderies, and fuel for domestic uses. Nay, in some places, the trees are felled for no other purpose but to clear the ground and to be burned into ashes for manure. A great quantity of timber is yearly exported to Scotland and Spain: but this is inconsiderable when compared to the vast exports from Drammen, Frederickstadt, Christiania, Skeen, Arendal, Christiansand, Christian's-bay, and Drontheim. The masts and large beams are floated down the rivers, and the rest is divided into boards at the saw-mills. These works supply a vast number of families with a comfortable subsistence. A tenth part of all sawed timber belongs to the king, and makes a considerable branch of his revenue. The forests in Norway are so vast and thick, that the people seem to think there can never be a scarcity of wood, as the soil is peculiarly adapted for the production of timber: More wood is therefore allowed to rot in Norway than is burnt in the whole kingdom of Denmark. The best timber grows in the provinces of Saltan, Helleland, Romsdale, Guldbrandsdale, Oesterdale, Soloe, Valders, Hallingdale, Sognifiord, Tellemark, and the lordship of Nedene. See § 16.

(II.) NORWAY, a township of the United States in Maine, and county of Cumberland.

(III.) NORWAY, a township of New York, in Herkemer Co. incorporated in 1792, and containing 2164 souls in 1796, of whom 353 were electors.

(IV.) NORWAY MOUSE, or LEMMING. See MUS, § III, N° 33. i.

(V.) NORWAY RAT. See MUS, § III. N° 27.

NORWEGIAN, *adj.* Of or from NORWAY.

NORWEGIANS, *n. s.* The people of Norway. See NORWAY, N° I. § 6, 8, and 12.

(1.) NORWICH, the capital of Norfolk. This city is pleasantly seated along the side of a hill, 1½ miles long from N. to S. but much less in breadth, which contracts towards the S. It is supposed to have had its name, which signifies *a castle to the north*, from its situation in respect to Castor the ancient *Venta Icenorum*, 3 or 4 miles S. of it, out of whose ruins it seems to have risen. In its infancy, in the reign of Ethelred, it was plundered and burnt by Sueno the Dane, when he invaded England with a great army. Afterwards it recovered; and in the reign of Edward the Confessor was a considerable place, having 1320 burghers. But it suffered again much in the reign of William I. by being the seat of a civil war, which Ralph earl of the East Angles raised against that king. So much was it impaired by the siege it then underwent, that there were scarce 560 burghers left in it, as appears from Doomsday book. But it began to recover, after Bp. Herbert translated the episcopal see thither from Thetford in the reign of William II. in 1096; and built a beautiful cathedral, of which he laid the first stone, and, by a licence from Pope Paschal, declared it the mother church of Norfolk and Suffolk. It was made a corporation by K. Stephen, and became famous for merchandise, but was miserably harassed in the reign of Henry II. by Hugh Bigod earl of Norfolk, who was an adherent of Henry's son. In the time of Edward I. it was walled round by the citizens, under the authority of parliament. Henry IV. allowed them, instead of bailiffs, to elect a mayor yearly, and made the city a county. In 1348, near 58,000 persons were carried off by the plague; and in 1505, the city was almost destroyed by fire. For the flourishing state to which it has since arrived, the citizens are much indebted to the Flemings, who fled hither from the tyranny of the duke of Alva and the inquisition, and taught them the manufacture of those striped and flowered damasks, camblets, druggets, black and white crape, for which the place is now so noted, as well as for baizes, serges, shalloons, stockings, and woollen cloths; and which have been computed to yield sometimes 200,000*l.* a-year. In 1583, the citizens procured water to be conveyed by an engine, through pipes, to the highest parts of the city, which is now one of the most considerable cities in Britain for wealth, populousness, neat buildings, beautiful churches (of which it had once 58, but now only 36), and the industry and civility of the inhabitants. The cathedral is a venerable structure, with a curious roof, adorned with the history of the Bible in little images, carved to the life, and a lofty steeple 105 yards high. The wall of flint stone, beautified with 40 towers and 12 gates, finished in 1309, is now much decayed. The city, though there is a great deal of waste ground within the walls, was computed about 1730, to contain 8000 houses and 50,000 inhabitants. The other most remarkable buildings are, the duke of Norfolk's house, one of the largest in England; the castle, which is now the county-gaol, is in the heart of the city, with a deep moat round it,

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it, over which is a bridge of one very large arch; the Town-hall; the Guild-hall, formerly the church of the Black-Friars; the houſe of correction; the county houſe, where the aſſizes are held; a lofty market croſs, built after the manner of a piazza; the biſhop's palace; the king's ſchool, founded by Edward VI. the boys of which are preſented by the mayor and aldermen. The city is interſperſed with gardens, orchards, and trees, which make it both pleaſant and healthful. It has 4 hoſpitals, for old men and women, boys and girls; and 12 charity ſchools; and two churches for the Dutch and French Flemings; who have particular privileges, and are very numerous. Some of the churches are thatched, and all of them cruſted with flint ſtone curiouſly cut; Norwich is governed by a mayor, recorder, ſteward, two ſheriffs, 24 aldermen, 60 common councillors, a town-clerk, ſword-bearer, and other inferior officers. The mayor is choſen on May-day by the freemen; the ſheriffs on the firſt Tueſday in Auguſt, one by the freemen, the other by the aldermen. The freemen of the wards chooſe each their aldermen. The common-council is choſen in Midlent. The mayor is a juſtice of the peace and quorum (as are alſo the recorder and ſteward) within the city and liberties; and after his mayoralty, he is a juſtice during life. The trade and manufactures are very conſiderable. At Yarmouth they export large quantities of their manufactures, moſtly to London, and import a great deal of wine, coal, fiſh, oil, &c. All the city and country are employed in the worſted manufacture, in which they not only conſume the wool of their own county, but uſe many thouſand packs of yarn, imported from Yorkſhire and Weſtmoreland, &c. There are 8 wardens of the weavers choſen annually, and ſworn to prevent frauds in ſpinning, weaving, or dying the ſtuffs. About 120,000 people are employed in the ſilk and woollen manufactures. Their markets are among the greateſt in England, for plenty and variety of goods and proviſions. They are held on Wed. Frid. and Sat. Norwich has a great number of fairs, beſides that of *St. Faith's*, near it; (See FAITH'S, ST.) and ſends two members to parliament. The inhabitants of Norwich are generally ſo much employed in their manufactures within doors, that the city has the appearance of being deſerted, except on Sundays and holidays, when the ſtreets ſwarm with people. Norwich lies 3 miles N. of Caſtor, the ancient *Venta*, (See CASTOR § II, N° 2, and VENTA;) 43 miles N. of Ipſwich, 109 NNE. of London, and 160 ENE. of Oxford. Lon. 1. 20. E. Lat. 52. 40. N.

(2.) NORWICH, a city of Connecticut, in New London county, at the head of New Thames river, firſt ſettled in 1660. It contained a court-houſe, 3 churches, 450 houſes, an academy and 3000 citizens in 1795. They manufacture paper, clocks, watches, chaiſes, ſtockings, buttons, ſtone and earthen wares, oil, chocolate, bells, wire, anchors, and all kinds of iron work. It is 14 miles N. of New London, 40 SE. of Hartford, and 251 NE. of Philadelphia.

(3.) NORWICH, a townſhip of Maſſachuſetts, in Hampſhire county, containing 742 citizens in 1795; 24 miles SW. of Northampton, and 142 W. of Boſton.

(4.) NORWICH, a townſhip of New York in Tioga county, 55 miles W. of Cherry. It lies near Jericho and Union; and had 129 electors in 1796.

(5.) NORWICH, a town and townſhip of Vermont, in Windſor county, on the W. bank of the Connecticut, containing 1158 citizens in 1795: 100 miles NNW. of Boſton, and 182 N. of New York. Lon. 72. 22. W. Lat. 43. 40. N.

NORWOOD, a neat village of England in Surry, ſeated on a wildly rural ſpot on a hill, which was formerly a principal haunt of the Gypſies, is 5 miles S. of London.

NOSCHALSKOI, a town of Ruſſia, in the province of Uſtiug; 68 miles SE. of Lalaſk.

(1.) * NOSE. *n. ſ.* [*næſe*, *noſa*, Saxon.] 1. The prominence on the face, which is the organ of ſcent, and the emunctory of the brain.—

Down with the *noſe*,
Take the bridge quite away
Of him that, his particular to forefend,
Smells from the gen'ral weal. *Shak. Timon.*

Noſe of Turks and Tartars lips. *Shak. Macb.*

Liberty plucks juſtice by the *noſe*. *Shak.*

—There can be no reaſon given why a viſage ſomewhat longer, or a *noſe* flatter, could not have conſiſted with ſuch a ſoul. *Locke.*—Poetry takes me up ſo entirely, that I ſcarce ſee what paſſes under my *noſe*. *Pope's Letters.* 2. The end of any thing.—The lungs are as bellows, the aſpera arteria is the *noſe* of the bellows. *Holder's Elements.* 3. Scent; ſagacity.—We are not offended with a dog for a better *noſe* than his maſter. *Collier on Envy.* 4. *To Lead by the* NOSE. To drag by force: as a bear by his ring. To lead blindly.—

Tho' authority be a ſtubborn bear,
Yet he is oft *led by the noſe* with gold. *Shak.*

—In ſuits which a man doth not underſtand, it is good to refer them to ſome friend, but let him chuſe well his referendaries, elſe he may be *led by the noſe*. *Bacon.*—

That ſome occult deſign doth lie
In bloody cynarctomachy,
Is plain enough to him that knows,
How ſaints *lead* brothers *by the noſe*. *Hudibras.*

—This is the method of all popular ſhams, when the multitude are to be *led by the noſes* into a fool's paradiſe. *L'Eſtr.* 5. *To thruſt one's* NOSE *into* the affairs of others. To be meddling with other people's matters; to be a buſy body. 6. *To put one's* NOSE *out of* joint. To put one out in the affections of another.

(2.) NOSE. See ANATOMY, *Index*. The uſes of the noſe are, its giving us the ſenſe of ſmelling; its ſerving in the great office of reſpiration, and in modelling the voice; in receiving the abundant humours from the eyes, and in adding to the beauty of the face. The noſe was by the Augurs particularly attended to in their conjectures concerning future good or ill ſucceſs. In Tartary, the greateſt beauties are thoſe who have the ſmalleſt noſes. Ruybrock mentions the wife of the great Jenghiz Khan as a celebrated beauty, becauſe ſhe had only two holes for a noſe. The Crim-Tartars break the noſes of their children while young, as thinking it a great piece of fol-

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ly to have their noſes ſtand before their eyes. In moſt other countries, China excepted, great noſes are an honour. In what the beauty of the noſe conſiſts, different nations have different opinions. Sir Joſhua Reynolds in his Eſſay on Beauty, the various opinions reſpecting which he traces entirely from cuſtom and habit, (See *the Idler*, vol. ii; and our article BEAUTY, § 5-12:) obſerves, that "the line that forms the ridge of the noſe is beautiful when it is ſtraight; this then is the central form which is oftener found than either concave, convex, or any other irregular form that ſhall be propoſed."

(1.) * *To* NOSE. *v. a.* [from the noun.] 1. To ſcent; to ſmell.—

Noſe him as you go up the ſtairs. *Shak. Haml.*

2. To face to oppoſe.

(2.) * *To* NOSE. *v. n.* To look big; to bluſter.—

Aduſt'rous Anthony
Gives his potent regiment to a trull
That *noſes* it againſt us. *Shak.*

(1.) * NOSEBLEED. *n. ſ.* [*noſe* and *bleed*; *milleſolium*.] A kind of herb.

(2.) NOSEBLEED. See ACHILLÆA.

* NOSEGAY. *n. ſ.* [*noſe* and *gay*.] A poſie; a bunch of flowers.—She hath four and twenty *noſegays* for the ſheaſters. *Shak.*—

As on the *noſegay* in her breaſt reclin'd,
He watch'd th' ideas riſing in her mind. *Pope.*

—Get you gone into the country and dreſs up *noſegays* on a holiday. *Arbuthnot's Hiſt. of J. Bull.*

* NOSELESS. *adj.* [from *noſe*.] Wanting a noſe; deprived of the noſe.—

Mangled Marmidons
Noſeleſs and handleſs, hackt and chipt, came to him. *Shak.*

NO-SELF. *n. ſ.* an expreſſive word uſed by Dr Bentley, in his argument againſt atheiſm, to ſhow the abſurdity of ſuppoſing an original ſtate of univerſal *non-exiſtence*, producing the preſent ſtate of things without the creative power of a Deity. See NON-ENTITY.

(1.) * NOSESMART. *n. ſ.* [*noſe* and *ſmart*; *naſturtium*.] The herb called creſſes,

(2.) NOSESMART. See LEPIDIUM.

NOSLE. *n. ſ.* The moveable ſocket of a candleſtick. 2. The end of any thing. *Aſh.*

NOSOCOMIUM. *n. ſ.* [Gr. from νοσος, a diſeaſe, and κομεω, to cure.] An infirmary.

(1.) * NOSOLOGY. *n. ſ.* [νοσος and λογος.] Doctrine of diſeaſes.

(2.) NOSOLOGY ſignifies alſo a diſcourſe or treatiſe of diſeaſes; otherwiſe called PATHOLOGY. The importance of a comprehenſive and accurate noſology has been long and generally allowed. Baglivi, Boerhaave, Gorter, Gaubius, and Sydenham, have expreſſed their deſire of a work of this kind, the great object of which is to fix pathognomonics to every diſeaſe; or in which all diſeaſes are diſpoſed into certain claſſes, orders, and genera, founded on diſtinctions taken from the ſymptoms only, without regard to remote or proximate cauſes. Under the article MEDICINE, are mentioned ſome of the moſt accurate noſological arrangements; and we need only to add, that in 1776, Dr Sagar, at Iglaw in Moravia, publiſhed a *Syſtema Morborum Symptomaticum*, in 8vo, which is an uſeful abridgment of M. Sauvages's work, with ſome alterations and additions. See MEDICINE, *Index*.

* NOSOPOETICK. [νοσος and ποιεω.] Producing diſeaſes.—The qualities of the air are *noſopoetick*; that is, have a power of producing diſeaſes. *Arbuthnot on Air.*

NOSOVSKOI, a cape of Nova Zembla.

(1.) NOSS, one of the moſt fertile of the SHETLAND Iſles, SE. of Breſſay. Near it there is a rock, or *holm*, about 150 feet high, and perpendicular on all ſides. The oppoſite rock on the iſland is nearly of equal height, and diſtant about 240 feet. The holm which is quite level on the top, produces excellent graſs. Although it ſeemed inacceſſible on all ſides, the richneſs of the graſs, and the vaſt numbers of ſea fowls which breed on it, induced the proprietor, many years ago, to try to fall upon ſome means of paſſing from the iſland to it. Accordingly a daring iſlander attempted to climb up and ſucceeded. He fixed poſts in the ground, about 2½ feet from each other, correſponding poſts being fixed on the oppoſite ſide. Ropes were ſtretched acroſs from the one ſide to the other, upon which a wooden cradle ſlides along, and affords a ſafe conveyance between the iſland and the holm. But the man who firſt aſcended the rocks would not take the benefit of the cradle, but, attempting to return the way he went up, fell and was killed. Sheep are now annually put on the holm in ſpring, and taken back in autumn in excellent condition. The ſea-fowls alſo afford delicate eating.

(2.) NOSS HEAD, a cape on the E. coaſt of the above iſland. Lon. 0. 17. E. of Edinburgh. Lat. 58. 23. N.

NOSSANO, a town of Italy, in the republic of Lucca, 6 miles W. of Lucca.

NOSSA SENHORA DA ENCARNACAOM, a town of Portugal, in Algarve, near Cape Carvoeiro, on the S. coaſt, 4½ miles S. of Villa Nova.

NOSSEN, a town of Saxony, in Erzgeburg, on the Muldau, 18 miles W. of Dreſden.

NOSSONCOURT, a town of France, in the dep. of the Voſges, 3 miles NE. of Ramberviller.

NOSTOCH, in natural hiſtory, SHOT STARS; *tremella noſtoc*, (Lin. Spec. Plant. Dillenius de Muſcis, tab. 10. fig. 14. Flor. Danica, tab. 885. fig. 1.); *tremella inteſtinalis vel meſenterica*, (Lin. Spec. Plant. Dillen de Muſc. tab. 10. g. 16. Flor. Danic. tab. 885. fig. 2.) A writer in the *Gent. Mag.* gives this account of it: "The ſubſtance in queſtion is not unfrequent in England, nor in all other parts of Europe, after rains, both in ſpring and autumn. Very large ſpots of it are ſeen in gravelly ſoils, and particularly on the tops of hills, and on open downs, and often it is found on gravel walks. It is met with in ſome of the old authors, under the name of *noſtoch*, as in Paracelſus and others; and the alchemiſts fancied there was ſomething wonderful in it, and that it would afford a menſtruum for gold. Noſtoch is ſaid to be a word ſynonymous to *Jaculum alicujus ſtellæ, vel potius ejus repurgatione dejectum quid in terram; flos aeris, fragmentum nimbi*; as this ſubſtance was believed to fall from the ſky with the meteors that we often ſee, and call *falling ſtars*. Hence the country people in Sweden have called it *ſky-fall*; and in England it is known by the

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name of *witches butter*, in common with ſome of the gelatinous liverworts. Paracelſus, Van Helmont, and others, ranked it with the *terniabin*, or manna, and thought it dropped, as that did, from heaven. It is deſcribed, and the chemical analyſis thereof given, by M. Geoffroy, in the *Paris Memoirs* for 1708, and is there ſaid to yield, beſides an acid phlegm, a portion of concrete volatile ſalt, and ſome fixed ſalt. The diſtilled water from it was believed by ſome to poſſeſs ſingular virtues in allaying pains of the joints; but there is certainly no room to attribute any extraordinary qualities to it.—Since the days of Paracelſus it has been conſidered as a vegetable production; but the botaniſts have had difficulty to aſſign its place or genus in their ſeveral ſyſtems. Dr Merret ſeems to have been among the firſt who ranked it among vegetables, and he calls it *Lichen humiditate intumeſcens, ſiccitate evaneſcens*, (Plin. page 71). Others have retained it among the plants of that genus to this day; as does the celebrated Dr Haller, in his *Hiſtoria Stirp. Helvetiæ*, who calls it *Lichen gelatinoſus, plicatus, undulatus; laciniis criſpatis, granuloſis*, N° 2041; as there are ſeveral of the liverworts that have a gelatinous texture and appearance, though they differ much from the noſtoch, in not being ſo inſtantly dried up. It was put into Ray's Synopſis by Dr Dillenius, under the name of *Ulva terreſtris pinguis et fugax*, p. 64.; but he afterwards changed that name for *tremella*, in his *Hiſtoria Muſcorum*, where he calls it *tremella terreſtris ſinuoſa pinguis et fugax*, p. 52. tab. 10. f. 14. and reduces the layers to the ſame genus. Micheli, an Italian botaniſt, famous for his attention to the Cryptogamia claſs of plants, makes it a *fungus*, as Magnol and Dr Moriſon had done before him, and deſcribes and figures it, in his *Nova Plantarum Genera*, under the name of *Linkia terreſtris gelatinoſa, membranacea, vulgatiſſima*, p. 126. t. 57. f. 1. He deſcribes the ſeeds as lying in the form of little ſtrings of beads, coiled up within the plant, or rather in the folds thereof, and only to be diſcovered by the microſcope. Linnæus mentions it, firſt under the name of *Byſſus gelatinoſa fugax terreſtris*, in his *Flora Lapponica*, N° 530; but he afterwards adopted Dillenius's term, though he does not make it a laver. Linnæus has called it, in all his ſubſequent works, *tremella (noſtoc) plicata, undulata*, under which name it ſtands in his *Species Plantarum*, p. 1157, and in Hudſon's *Flora Anglica*, p. 463; as alſo in a numerous ſet of other authors who follow his ſyſtem." Naturaliſts had for ſome years begun to doubt whether theſe gelatinous ſubſtances were of a vegetable or animal nature, when at length Mr J. Platt of Oxford, in his letter printed in the *Gentleman's Mag.* for 1776, page 402, threw ſuch light on the ſubject as to be ſatisfactory. "From a child I remember ſeeing the meteors ſhooting in the air, which appearance, by my comrades, was called *ſtar-ſhooting*, believing the ſtars no larger than their apparent magnitude. This jelly-like ſubſtance, mentioned in your magazine, was believed to be the droſs of theſe meteors, and took the name of *ſtar-ſhot*, which paſſed for certain with me till I had arrived at the age of 24, when I was engaged in buſineſs that required my frequently paſſing over both meadows and paſture grounds, where in ſpring and autumn I ſaw many portions of this ſuppoſed alga or noſtoch, but never more than one or two contiguous, moſtly near the water, when the meadows were or had been juſt before flooded. My conjectures were various, until I ſaw a crow pecking of ſomething in a field, which I heard to cry; when turning my horſe to the place, I found a frog of the common ſize, which the crow (of the carrion kind) would ſoon have killed and gorged, had I not diſturbed her, and chaſed her away. About this time I found in a meadow the bowels of a frog indigeſted, and compact as the chitterlings of a calf or pig; but white as the paper I write upon, though not tranſlucid. I took it up, and placed it in a paper expoſed to the air, leaving it in ſome graſs where I found it, till my return that way in three days time, when I ſaw it changed to that tremulous jelly-like ſubſtance, the alga or ſtar-ſhot. I was much pleaſed with this diſcovery, and took it home in my pocket wrapped in paper, where I ſhowed it to a ſociety of young perſons of which I was a member, who agreed with my ſentiments of its being the indigeſtible part of a frog diſgorged by ſome bird of prey. To corroborate my ſentiments of this alga being the bowels of a frog, I luckily ſaw ſome of it lying by the ſide of a brook, where I lighted and took it up, and to my great ſurpriſe found attached to the jelly, the head, heart, liver, and one leg of the frog, which had been (I preſume) diſgorged by ſome carrion crow, who frequented the flooded grounds to pick up worms and other vermin. There was alſo ſome of it found in an apple-tree at Wyſton Magna, near Leiceſter, where I then lived, which, no doubt, was diſgorged by ſome owl." Dr Darwin, in his poem on the Loves of the Plants, is of the ſame opinion with Mr Platt, that theſe gelatinous ſubſtances are of an animal nature, and that the different appearances they put on are owing to various circumſtances, viz. the different birds who feed on frogs, the quantity they devour at a time, and the ſtate of digeſtion before they are voided. See TREMELLA, N° 3.

NOSTRADAMUS, Michael, an able phyſician and a celebrated aſtrologer, was a Provencial, of a noble family, and born Dec. 14, 1503, at St Remy, in the dioceſe of Avignon. By his grandfather he was initiated in the mathematics. He afterwards completed his courſes of humanity and philoſophy at Avignon; and, going to Montpelier, he applied himſelf to phyſic, till being forced away by the plague in 1525, he removed to Thouloufe, and afterwards to Bourdeaux. This courſe held him five years, during which he practiſed phyſic. After this he returned to Montpelier, and was created M. D. in 1529, and then reviſited the ſame places. At Agen he contracted an acquaintance with Julius Cæſar Scaliger, and married; but his wife dying, and two children ſhe had brought him, he quitted Agen, after a reſidence of about four years. He returned into Provence, and fixed himſelf at Marſeilles; but afterwards ſettled at Salon, in 1544. In 1546, Aix being afflicted with the plague, he went thither at the requeſt of the inhabitants, and was of great ſervice, particularly by a powder of his invention; ſo that the town in gratitude gave him a penſion for

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for several years after the contagion ceased. Returning afterwards to Salon, he became a recluse, and applied himself to his studies. He had long affected the character of a *conjuror* occasionally; and now he began to think himself inspired, and miraculously illuminated with a prospect into futurity. In 1555 he published a volume of his prophecies, containing seven centuries of quatrains; and in 1558 he published a complete milliade. In that superstitious age, these productions procured him admirers even among crowned heads; and one of his obscure passages being interpreted into a prediction of the death of Henry II. *after the event*, Charles IX. presented him with 200 crowns, and constituted him his physician in ordinary. But our prophet enjoyed these honours only 16 months; for he died July 2, 1566, at Salon. Besides his *Centuries*, he published, 1. *A Treatise de fardemens et de senteurs*, 1552: 2. *A Book of singular Receipts, entretenir la sante du corps*, 1556: 3. *A Piece des confitures*, 1557: 4. *A French Translation of the Latin of Galen's Paraphrase, exhorting Menedotus to study, especially to that of physic*, 1552: 5. A small instruction for husbandmen, entitled, *The Almanac of Nostradamus*. After his death came out *The eleventh and twelfth Centuries of his Quatrains*, added to the former ten, which had been printed three times in two separate parts.

NOSTRE, Andrew LE, comptroller of the buildings of the French king, and designer of his gardens, distinguished himself by carrying the art of laying out gardens to great perfection. He was born at Paris in 1631; and was near 40 years of age when M. Fouquet, superintendant of the finances, gave him an opportunity of becoming known by the fine gardens of Vaux le Vicomte. He was afterwards employed by Lewis XIV. at Versailles, Trianon, St Germains, &c. and discovered an admirable taste in all his works. In 1678 he went to Rome to improve his skill, but found nothing there comparable to what he himself had done. Le Nostre had also a talent for painting. He preserved his vivacity of mind to the last, and died at Paris in 1700, aged 87.

(1.) * NOSTRIL. *n. s.* [*nose* and *thyrl*, a hole, Saxon.] The cavity in the nose.—

A savour that may strike the dullest *nostril*. *Shak.*

—Stinks, which the *nostrils* straight abhor, are not the most pernicious. *Bacon.*—

He form'd thee, Adam, and in thy *nostrils* breath'd
The breath of life. *Milton.*

—The *nostrils* are useful both for respiration and smelling, but the principal use is smelling. *Brown.*—These ripe fruits recreate the *nostrils* with their aromatic scent. *More.*

(2.) NOSTRILS. See ANATOMY, § 543, 544.

* NOSTRUM. *n. s.* [Latin.] A medicine not yet made publick, but remaining in some single hand.—Very extraordinary, and one of his *nostrums*, let it be writ upon his monument, *Hic jacet auctor hujus argumenti*; for nobody ever used it before. *Stilling fleet.*—

What drop or *nostrum* can this plague remove? *Pope.*

* NOT. *adv.* [*ne auht*, Saxon; *niet*, Dutch.] 1. The particle of negation, or refusal.—

How falls it then that with thy furious fervour,
Thou dost afflict as well the *not* deserver,
As him that doth thy lovely hests despise? *Spens.*
His countenance likes me *not*. *Shak.*

—The man held his peace, to wit whether the Lord had made his journey prosperous or *not*. *Gen.* xxiv. 21.—The question is, may I do it, or may I *not* do it? *Sanderf.*—

He is invulnerable, I *not*. *Milton.*
Let each man do as to his fancy seems;
I wait, *not* I, till you have better dreams. *Dryd.*

—This objection hinders *not*, but that the heroic action enterprised for the Christian cause, and executed happily, may be as well executed now as it was of old. *Dryden.*—Grammar being to teach men *not* to speak, but to speak correctly, where rhetoric is *not* necessary, grammar may be spared. *Locke.*—

This day be bread and peace my lot;
All else beneath the sun
Thou know'st if best bestow'd or *not*,
And let thy will be done. *Pope's Univ. Prayer.*

2. The first member of a negative sentence, followed by *nor* or *neither*.—I was *not* in safety, *neither* had I rest. *Job.*—*Not* for price *nor* reward. *Isaiah.* 3. A word of exception.—I will for this afflict the seed of David, but *not* for ever. *Kings.* 4. A word of prohibition, or deprecation.—Stand in awe, and sin *not*. *Psalms.*—Forsake me *not*, O Lord; O my God, be *not* far from me. *Psalms.* 5. It denotes cessation or extinction. No more.—Thine eyes are upon me, and I am *not*. *Job* vii. 8.

(1.) * NOTABLE. *adj.* [*notable*, Fr. *notabilis*, Lat.] 1. Remarkable; memorable; observable: it is now scarcely used, but in irony.—The success of those wars was too *notable* to be unknown to your ears. *Sidney.*—The fame is notified in the *notablest* places of the diocese. *Whitegifte.*—At Kilkenny, many *notable* laws were enacted. *Davies.*—Two young men appeared, *notable* in strength, excellent in beauty, and comely in apparel. 2 *Mac.* iii. 26.—They bore two or three charges from the horse with *notable* courage, and without being broken. *Clarendon.*—Both armies lay still without any *notable* action, for the space of ten days. *Clarendon.*—Varro's aviary is still so famous, that it is reckoned for one of those *notables* which foreign nations record. *Addison.*—It is impossible but a man must have first passed this *notable* stage, and got his conscience thoroughly debauched and hardened, before he can arrive at the height of sin. *South.* 2. Careful; bustling: in contempt and irony.—This absolute monarch was as *notable* a guardian of the fortunes, as of the lives of his subjects. When any man grew rich, to keep him from being dangerous to the state, he sent for all his goods. *Addison.*

(2.) NOTABLES, ASSEMBLY OF THE. See FRANCE, § 52, 53.

* NOTABLENESS. *n. s.* [from *notable*.] Appearance of business; importance: in contempt.

* NOTABLY. *adv.* [from *notable*.] 1. Memorably; remarkably.—This we see *notably* proved, in that the oft polling of hedges conduces much

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to their lasting. *Bacon*,—Herein doth the endless mercy of God *notably* appear, that he vouchsafeth to accept of our repentance. *Perkins*. 2. With consequence; with shew of importance: ironically.—Mention Spain or Poland, and he talks very *notably*; but if you go out of the gazette, you drop him. *Addison*.

NOTÆ, signs used in writing, which have the force of many letters. This contrivance for expedition is of great antiquity. It was known to the Greeks, and from them derived to the Romans. By whom the invention was brought into Rome is not precisely ascertained; but the most general opinion is, that in matters of importance Tully first made use of notes or short-hand writing, when Cato made an oration in order to oppose Julius Cæsar, relative to the conspiracy of Catiline. Cicero, who was at that time consul, placed *notarii*, or expert short-hand writers, in different parts of the senate-house, to take down the speech; and this was the first public occasion which we find recorded of employing short-hand writers among the Romans. Hence was derived the term NOTARY still in use. There were three kinds of notes for short-hand writing used by the ancients, either for dispatch or secrecy. The first and most ancient was that of hieroglyphics, which are rather images or representations of things than of words, (See HIEROGLYPHICS.) The Chinese characters are of this kind, and may with greater propriety be called *notæ* than *literæ*. The second species of notes were called *singulariæ*, from their expressing words by single letters. Sertorius Ursatus has compiled a very copious collection of such abbreviations, of which work there are several editions. The third kind of notes were called *notæ Tironianæ*, from Tiro the freedman of Cicero, who was excellently skilled in this art; and to him we are indebted for the preservation of Cicero's letters, of which a great part still remain, and one entire book of them written to Tiro himself. From books it appears, that notes were very frequent among the Romans, and continued in use to the 10th and 11th centuries. We have indeed but few books remaining that are written in short-hand; but this is not surprising, when such was the unhappy situation of early ages, that either superstition condemned them to the flames as the works of impious magicians or necromancers, or they were left to be devoured by vermin, through ignorance and stupidity, which was so very great, that some people, as Trithemius affirms, looked upon notes in those days as the elements of the Armenian language. It is probable, however, that there are writings of this sort still extant, which might help to enrich the republic of letters. There were several MSS. and instruments written in this kind of notæ, in the royal library at Paris, which are no doubt preserved in the national library. In 1747, the learned and ingenious M. Carpentier engraved and published at Paris a capitulary and 54 charters of Lewis the Pious, emperor and king of France, written in these notæ Tironianæ. To this work the learned editor hath prefixed an *Alphabetum Tironianum*, together with a great number of notes for the different parts of speech, and rules for acquiring the art of writing in these kinds of notes. Valerius Probus, in his book *De literis antiquis*, explains many of the characters used by the short-hand writers; and there is a dictionary of them set forth by Janus Gruterus. See STENOGRAPHY.

* NOTARIAL. *adj*, [from *notary*.] Taken by a notary.—It may be called an authentick writing, though not a publick instrument, through want of a *notarial* evidence. *Ayliffe*.

NOTARII, persons employed by the ancient Romans to take, by NOTÆ, trials and pleadings in their courts of judicature, or to write as amanuenses from the mouth of an author. These notarii were of servile condition. Under the reign of Justinian, they were formed into a college or corporate body. Notarii were also appointed to attend the prefects, to transcribe for them. There were likewise *notarii domestici*, who were employed in keeping the accounts of the Roman nobility; and when the empire became Christian, there were notaries for ecclesiastical affairs, who attested the acts of archbishops, bishops, and other spiritual dignitaries. We find ecclesiastical notaries at Rome under Pope Julius IV. and in the church of Antioch about A. D. 370. From these notaries are derived the office of chancellor to the bishops. Afterwards almost every advocate was admitted a notary.

(1.) * NOTARY. *n. s.* [*notaire*, Fr. *notarius*, Lat.] An officer whose business it is to take notes of any thing which may concern the publick.—Their present authorised *notaries* do write those things fully. *Hooker*.—

Go with me to a *notary*, seal me there
Your bond. *Shak.*

—One of those with him, being a *notary*, made an entry of this act. *Bacon*.—

A ministerial *notary*; for 'tis
Not I, but you and fame that make this verse.
Donne.

—They have in each province intendants and *notaries*. *Temple*.

(2.) *A* NOTARY is usually a scrivener, who frames short draughts of contracts, obligations, charter-parties, or other writings. We call him a *notary-public*, who publicly attests deeds or writings, in order to make them authentic in another nation; but he is principally employed in business concerning merchants; as making protests of bills of exchange, &c. And *noting a bill* is where he goes to take notice of a merchant's refusal to accept or pay the same.

(1.) * NOTATION. *n. s.* [*notatio*, Lat.] 1. The act or practice of recording any thing by marks; as by figures or letters.—*Notation* teaches how to describe any number by certain notes and characters, and to declare the value thereof being so described, and that is by degrees and periods. *Cocker*. 2. Meaning; signification.—A foundation, being primarily of use in architecture, hath no other literal *notation* but what belongs to it in relation to a building. *Hammond*.—Conscience, according to the very *notation* of the word, imports a double knowledge; one of a divine law, and the other of a man's own action. *South*.

(2.) NOTATION, in arithmetic and algebra, the method of expressing numbers or quantities by signs or characters appropriated for that purpose. See ALGEBRA, and ARITHMETIC.

(1.) * NOTCH.

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(1.) * NOTCH. *n. f.* [*nocchia*, Italian.] 1. A nick; a hollow cut in any thing; a nock.—The convex work is compoſed of black and citrin pieces in the margin, of a pyramidal figure oppoſitely ſet, and with tranſverſe *notches*. *Grew.*—

From his rug the ſkew'r he takes,
And on the ſtick ten equal *notches* makes:
There take my tally of ten thouſand pound.
Swift.

3. It ſeems to be erroneouſly uſed for *nich*.—

He ſhew'd a comma ne'er could claim
A place in any Britiſh name;
Yet making here a perfect botch,
Thruſts your poor vowel from his *notch*. *Swift.*

(2.) NOTCH, a narrow paſs of New Hampſhire, in the W. part of the white mountains, only 22 feet wide, between two perpendicular rocks, 25 miles from Upper Coos.

(3.) NOTCH CAPE, a promontory in the Straits of Magellan, on the W. point of Goodluck Bay. Lon. 74. 34. W. Lat. 53. 33. S.

* *To* NOTCH. *v. a.* [from the noun.] To cut in ſmall hollows.—He was too hard for him directly: before Corioli, he ſcrotcht him and *notcht* him like a carbonado. *Shak.*—The convex work is compoſed of black and citrin pieces, cancellated and tranſverſely *notched*. *Grew.*—

From him whoſe quills ſtand quiver'd at his ear,
To him who *notches* ſticks at Weſtminſter. *Pope.*

NOTCHENGONG, a town of Indoſtan, in Berar, 47 miles SW. of Nagpour. Lon. 79. 17. E. Lat. 20. 32. N.

(1.) * NOTCHWEED. *n. f.* [*notch* and *weed*; *atriplex olida*.] An herb called orach.

(2.) NOTCHWEED. See ATRIPLEX.

(1.) * NOTE. *n. f.* [*nota*, Lat. *notte*, Fr.] 1. Mark; token: as Bellarmine's *notes* of the church.—Whoſoever appertain to the viſible body of the church, they have alſo the *notes* of external profeſſion, whereby the world knoweth what they are. *Hooker.* 2. Notice; heed.—

Give order to my ſervants that they take
No *note* at all of our being abſent hence. *Shak.*
I will beſtow ſome precepts on this virgin,
Worthy the *note*. *Shak.*

3. Reputation; conſequence.—Divers men of *note* have been brought into England. *Abbot.*—Andronicus and Junia are of *note* among the apoſtles. *Rom.*—As for metals, authors of good *note* aſſure us, that even they have been obſerved to grow. *Boyle.* 4. Reproach; ſtigma.—

The more to aggravate the *note*,
With a foul traitor's name ſtuff I thy throat.
Shak.

5. Account; information; intelligence; notice. Not uſed.—

She that from Naples
Can have no *note*; unleſs the ſun were poſt,
The man i' th' moon's too ſlow. *Shak.*

—If intelligence of the matter could not otherwiſe have been had but by him, advantage be not taken of the *note*, but the party left to his other means. *Bacon.* 6. State of being obſerved. Small matters come with great commendation, becauſe they are continually in uſe and in *note*. *Bacon.* 7. Tune; voice; harmonick or melodious ſound.—Theſe are the *notes* wherewith are drawn from the hearts of the multitude ſo many ſighs. *Hooker.*—

The wakeful bird tunes her nocturnal *note*.
Milton.
I now muſt change thoſe *notes* to tragic.
Milton.
Change your *note*, and let your lute report
The juſteſt grief that ever touch'd the court.
Waller.
One common *note* on either lyre did ſtrike,
And knaves and fools we both abhorr'd alike.
Dryden.

8. Single ſound in muſic.—

This univerſal frame began,
From harmony to harmony;
Thro' all the compaſs of the *notes* it ran,
The diapaſon cloſing full in man. *Dryden.*

9. Short hint; ſmall paper; memorial; regiſter.—

As *notes* whoſe faculties inclufive were,
More than they were in note. *Shak.*
In the body's priſon ſo ſhe lies,
Her divers powers of ſenſe to exerciſe,
By gath'ring *notes* out of the world's great book.
Davies.

10. Abbreviation; ſymbol; muſical character.—Contract it into a narrow compaſs by ſhort *notes* and abbreviations. *Baker.* 11. A ſmall letter.—

A hollow cane within her hand ſhe brought,
But in the concave had incloſ'd a *note*. *Dryden.*

12. A written paper.—I cannot get over the prejudice of taking ſome little offence at the clergy, for perpetually reading their ſermons; perhaps my frequent hearing of foreigners, who never make uſe of *notes*, may have added to my diſguſt. *Swift.* 13. A paper given in confeſſion of a debt.—His *note* will go farther than my bond. *Arbuth.* 14. Explanatory annotation.—The beſt writers have been perplexed with *notes*. *Felton.*—He kept much at home, and writ *notes* upon Homer and Plautus. *Law.*

(2.) NOTE (§ 1, *def.* 1.) is uſed for a mark made in a book or writing, where there occurs ſomething remarkable, and worthy of particular notice.

(3.) NOTE (§ 1, *def.* 9. 12.) is alſo a minute, or ſhort writing, containing ſome article of buſineſs; in which ſenſe we ſay *promiſſory note*, *note of hand*, *bank note*, &c.

(4.) NOTE (§ 1, *def.* 14.) is uſed for an explication of ſome paſſage in an author added in the margin, at the bottom of the page, or elſewhere; in which ſenſe it ſtands contradiſtinguiſhed to TEXT.

(5.) * NOTE. [for *ne mote*.] May not.—

Ne let him then admire,
But yield his ſenſe to be too blunt and baſe
That *note* without an hound fine footing trace.
Spenſer.

(6.) NOTES, in muſic, (§ 1, *def.* 8, 10.) characters which mark the ſounds, *i. e.* the elevations and fallings of the voice and the ſwiftneſs and ſlowneſs of its notions.

* *To* NOTE. *v. a.* [*noto*, Lat; *noter*, French.] 1. To obſerve; to remark; to heed; to attend; to take notice of.—

The fool hath much pined away.
No more of that, I have *noted* it well. *Shak.*
If much you *note* him,
You ſhall offend him. *Shak.*

—Some

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—Some things may in passing be fitly *noted*. *Hammond*.—

I began to *note*
The stormy Hyades, the rainy goat. *Addison*.

Wand'ring from clime to clime, observant stray'd,
Their manners *noted*, and their states survey'd. *Pope*.

2. To deliver; to set down.—St Augustin, speaking of devout men, *noteth* how they daily frequented the church. *Hooker*.—*Note* it in a book, that it may be for ever and ever. *Is.* xxx. 8. 3. To charge with a crime: with *of* or *for*.—*Sine veste Dianam*, agrees better with Livia, who had the fame of chastity, than with either of the Julia's, who were both *noted of* incontinency. *Dryd.* 4. [In music.] To set down the notes of a tune.

NOTEBACH, a town of Sweden, in Smaland.

* NOTEBOOK. *n. s.* [*note* and *book*.] A book in which notes and memorandums are set down.

Cassius all his faults observ'd;
Set in a *notebook*, learn'd, and conn'd by rote,
To cast into my teeth. *Shak*.

NOTEBURG. See NOTTEBURG.

* NOTED. *part. adj.* [from *note*.] Remarkable; eminent; celebrated.—A *noted* chymist procured a privilege, that none but he should vend a spirit. *Boyle*.—Justinian's laws, if we may believe a noted author, have not the force of laws in France or Holland. *Baker*.

* NOTER. *n. s.* [from *note*.] He who takes notice.

NOTH, a hill of Scotland in Aberdeenshire, of a conical shape, 600 feet above its base, and 1000 above the sea-level.

* NOTHING. *n. s.* [*no* and *thing*.]; *nathing*, Scottish.] 1. Negation of being; nonentity: universal negation: opposed to *something*.—It is most certain, that there never could be *nothing*. For if there could have been an instant, wherein there was *nothing*, then either *nothing* made something, or something made itself; and so was, and acted, before it was. But if there never could be *nothing*, then there is and was a being, of necessity, without any beginning. *Grew*.—We do not create the world from *nothing* and by *nothing*; we assert an eternal God to have been the efficient cause of it. *Bentley*.—This nothing is taken either in a vulgar or philosophical sense; so we say there is *nothing* in the cup in a vulgar sense, when we mean there is no liquor in it; but we cannot say there is *nothing* in the cup, in a strict philosophical sense, while there is air in it. *Watts*. 2. Nonexistence.—

Mighty states characterless are grated
To dusty *nothing*. *Shak*.

3. Not any thing; no particular thing.—There shall *nothing* die. *Ex.* ix. 4.

Yet had his aspect *nothing* of severe. *Dryden*.—Philosophy wholly speculative is barren, and produces *nothing* but vain ideas. *Dryden*.—*Nothing* at all was done, while any thing remained undone. *Addison*. 4. No other thing.—*Nothing* but a steady resolution brought to practice; God's grace used, his commandments obeyed, and his pardon begged; *nothing* but this will entitle you to God's acceptance. *Wake*.—Words are made to declare something; where they are otherwise used, they conceal indeed something; but that which they conceal, is *nothing* but the ignorance, error, or sophistry of the talker; for there is, in truth, *nothing* else under them. *Locke*. 5. No quantity or degree.—The report, which the troops of horse make, would add *nothing* of courage to their fellows. *Clarendon*. 6. No importance; no use; no value.—The outward shew of churches draws the rude people to the reverencing and frequenting thereof, whatever some of our late too nice fools say, there is *nothing* in the seemly form of the church. *Spenser*.—Behold, ye are of *nothing*, and your work of naught. *Isa.* 7. No possession of fortune.—A most homely shepherd; a man that from very *nothing* is grown into an unspeakable estate. *Shak*. 8 No difficulty; no trouble.—We are industrious to preserve our bodies from slavery, but we make *nothing* of suffering our souls to be slaves to our lusts. *Ray*. 9. A thing of no proportion.—The charge of making the ground and otherwise is great, but *nothing* to the profit. *Bacon*. 10. Trifle; something of no consideration or importance.—

I had rather have one scratch my head i' th' sun,
When the alarum were struck, than idly sit
To hear my *nothings* monster'd. *Shak*.

My dear *nothings*, take your leave,
No longer must you me deceive. *Crashaw*.

'Tis *nothing*, says the fool; but says the friend,
This *nothing*, Sir, will bring you to your end. *Dryden*.

—That period includes more than a hundred sentences that might be writ to express multiplication of *nothings*, and all the fatiguing perpetual business of having no business to do. *Pope*.—

Narcissus is the glory of his race;
For who does *nothing* with a better grace? *Young*.

11. *Nothing* has a kind of adverbial signification. In no degree; not at all.—who will make me a liar, and make my speech *nothing* worth? *Job.* xxiv. 25.—Auria, *nothing* dismayed with the greatness of the Turk's fleet, still kept on his course. *Knolles's History*.—

But Adam with such counsel *nothing* sway'd. *Milton*.

* NOTHINGNESS. *n. s.* [from *nothing*.] 1. Nihility; nonexistence.—

His art did express
A quintessence even from *nothingness*,
From dull privations, and lean emptiness. *Donne*.

2. Nothing; thing of no value.—

I a *nothingness* in deed and name,
Did scorn to hurt his forfeit carcase. *Hudibras*.

(1.) NOTHUS, signifies *spurious*, or *bastard*; whence it is figuratively applied by physicians to such diseases as, though in respect of a similitude of symptoms, &c. they have the same denomination as some others, yet are of a different origin, seat, or the like, from the same.

(2.) NOTHUS, the surname of Darius II. King of Persia, grandfather to Darius Codomannus. See PERSIA.

NOTIA, a town of Sweden, in Smaland.

* NOTICE. *n. s.* [*notice*, French; *notitia*, Latin.] 1. Re-

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1. Remark; heed; observation; regard.—The think to be regarded in taking *notice* of a child's miscarriage is, what root it springs from. *Locke.* —This is done with little *notice*. *Locke.*—How ready is envy to mingle with the *notices* which we take of other persons! *Watts.* 2. Information; intelligence given or received.—I have given him *notice*, that the duke of Cornwall and his duchess will be here. *Shak. King Lear.*

* NOTIFICATION. *n. s.* [*notification*, Fr. from *notify.*] Act of making known; representation by marks or symbols.—Four or five torches elevated or depressed out of their order, either in breadth or longways, may, by agreement, give great variety of *notifications*. *Holder on Speech.*

* *To* NOTIFY. *v. a* [*notifier*, Fr. *notifico*, Lat.] To declare; to make known; to publish. —There are other kinds of laws, which *notify* the will of God. *Hooker.*—Good and evil operate upon the mind of man, by those respective appellations by which they are *notified* and conveyed to the mind. *South.*—This solar month is by civil sanction *notified* in authentic calendars the chief measure of the year: a kind of standard by which we measure time. *Holder.*

NOTIOMETER. HYGROMETER, § 2.

(1.) * NOTION. *n. s.* [*notion*, Fr. *notio*, Lat.] 1. Thought; representation of any thing formed by the mind; idea; image; conception.—Being at this time to speak of the proper *notion* of the church, therefore I shall not look upon it as comprehending any more than the sons of men. *Pearson.*—The fiction of some beings which are not in nature; second *notions*, as the logicians call them, has been founded on the conjunction of two natures, which have a real separate being. *Dryden's State of Innocence.*—Many actions are punished by law, that are acts of ingratitude; but this is merely accidental to them, as they are such acts; for if they were punished properly under that *notion*, and upon that account, the punishment would equally reach all actions of the same kind. *South.*—What hath been generally agreed on, I content myself to assume under the *notion* of principles. *Newton's Opticks.*—There is nothing made a more common subject of discourse than nature and its laws; and yet few agree in their *notions* about these words. *Cheyne's Phil. Prin.* —That *notion* of hunger, cold, sound, colour, thought, wish, or fear, which is in the mind, is called the idea of hunger, cold, sound, wish, &c. *Watt's Logick.* 2. Sentiments; opinion.—

God hath bid dwell far off all anxious cares,
And not molest us; unless we ourselves
Seek them with wand'ring thoughts and *notions* vain. *Milton.*

—It would be incredible to a man who had never been in France, should one relate the extravagant *notion* they entertain of themselves. *Addison's Freeholder.*—Sensual wits, they were, who, it is probable, took pleasure in ridiculing the *notion* of a life to come. *Atterbury.* 3. Sense; understanding; intellectual power. This sense is frequent in Shakespeare, but not in use.—

His *notion* weakens, his discernings
Are lethargy'd. *Shak. King Lear.*
So told, as earthly *notion* can receive. *Milt.*

(2.) NOTION is a word which in common language is considered as of the same import with IDEA. This however, is improper. *Idea* is derived from εἰδω *to see*; *Notion* from *noſco, novi, notum, to know.* In the original sense of the words, therefore *notion* is much more comprehensive than *idea*, because we *know* many things which cannot be seen. We have a notion of spirit, of power, of solidity; but of these things we can have no ideas. Ideas are relics of *sensation*; but there are objects of *knowledge* which fall under the cognizance of no sense; of these objects, however, we may have very distinct notions either direct or relative. Mr Boswell records in his *Life of Johnson*, that that great lexicographer "was particularly indignant against the almost universal use of the word *idea* in the sense of *notion* or *opinion*, when it is clear that *idea* can only signify something of which an image may be formed in the mind. We may have an *idea* or *image* of a mountain, a tree, or a building; but we cannot surely have an *idea* or *image* of an *argument* or *proposition*. Yet we have the sages of the law delivering their *ideas* upon the question under consideration, and the first speakers in parliament entirely coinciding in the *idea*, so ably stated," &c. See LOGIC, *Part* I, and METAPHYSICS. *Sect.* I.—X.

* NOTIONAL. *adj.* [from *notion.*] 1. Imaginary; ideal; intellectual; subsisting only in idea; visionary; fantastical.—The general and indefinite contemplations and notions of the elements and their conjunctions, of the influences of heaven, are to be set aside, being but *notional* and ill-limited; and definite axioms are to be drawn out of measured instances. *Bacon's Nat. Hist.*—

Happiness, object of that waking dream
Which we call life, mistaking; fugitive theme
Of my pursuing verse, ideal shade,
Notional good, by fancy only made. *Prior.*

—We must be wary, lest we ascribe any real subsistence or personality to this nature or chance; for it is merely a *notional* and imaginary thing; an abstract universal, which is properly nothing; a conception of our own making, occasioned by our reflecting upon the settled course of things. *Bentley.* 2. Dealing in ideas, not realities.—The most forward *notional* dictators sit down in a contented ignorance. *Glanville's Scepsis.*

* NOTIONALITY. *n. s.* [from *notional.*] Empty, ungrounded opinion. A word not in use.—I aimed at the advance of science, by discrediting empty and talkative *notionality*. *Glanville.*

* NOTIONALLY. *adv.* [from *notional.*] In idea; mentally; in our conception, though not in reality.—The whole rational nature of man consists of two faculties, understanding and will, whether really or *notionally* distinct, I shall not dispute. *Norris's Miscel.*

NOTITIA, in literary history, a book that gives an account of a particular country, city, or other place: such is the *Notitia Imperii Romani*, *Notitia Romæ Antiquæ*, &c.

NOTIUM, an ancient town of Æolia, near the Cayster, which was peopled by the inhabitants of Colophon.

(1.) NOTO, a lake of Russia, in Archangel, 36 miles long and 8 broad, 36 miles SW. of Kola.

(2.) NOTO, or NOTO NUOVO, *i. e. New Noto*, a large and handsome town of Sicily, capital of

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the valley of Noto. It is ſo named from the ancient NETUM, or *Noto*, which was entirely ruined by an earthquake in 1693; upon which the inhabitants built the preſent town at ſome diſtance from it. Lon. 14. 0. E. Lat. 36. 50. N.

(3.) NOTO, VAL DI, or the VALLEY OF NOTO, one of the three valleys or provinces into which Sicily is divided; lies between the ſea and the valleys of Demona, and Mazara. NOTO (N° 2.) is the capital.

NOTONECTA, the boat-fly; a genus of inſects belonging to the order of hemyptera. Barbut gives the following character of this genus: "The roſtrum is inflected; the antennæ are ſhorter than the thorax; the four wings which are coriaceous from their baſe to their middle, are folded together croſs-wiſe; the hind feet are hairy, and formed for ſwimming. To which may be added, that the tarſi are compoſed of two articulations, and all the ſix feet are equally formed for ſwimming. The abdomen terminated by four little horns or appendices." See *Plate* CCXXXVII. There are 14 ſpecies, of which 7 are common in Europe.

NOTONECTA GLAUCA is thus deſcribed by Barbut: "This inſect has a head ſomewhat round, of which the eyes ſeem to take up the greateſt part. Thoſe eyes are brown and very large, the reſt of the head being yellow. In the fore part it has a ſharp trunk that projects, and is inflected between the fore feet. On the ſides are ſeen the antennæ, very ſmall, yellowiſh, and that ſpring from under the head. The thorax, which is broad, ſhort, and ſmooth, is yellow on the fore and black on the back part. The eſcutcheon is large, of a rough black, and as it were nappy. The elytra, rather large, and croſſed over each other, are a mixture of brown and yellow, not unlike the colour of ruſt, which makes it look cloudy. The under part of the body is brown; and at the extremity of the abdomen are to be ſeen a few hairs. The feet, ſix in number, are of a light brown, the two hindermoſt having on the leg and tarſus hairs that give them the ſhape of fins; nor are they terminated by nails. The 4 anterior ones are ſomewhat flat, and ſerve the animal to ſwim with; but at their extremity they have nails and no hairs. This inſect is ſeen in ſtagnating waters, where it ſwims on its back, and preſents its abdomen upwards; for which reaſon it has been called by the Greek name of *notonecta*. The hinder feet, longer than the reſt, ſerve it as paddles. It is very nimble, and dives down when you go to take hold of it; after which, it riſes again to the ſurface of the water. It muſt be cautiouſly handled if one would avoid being pricked by it, for the point of its roſtrum is exceeding ſharp and intolerably painful, but it goes off in a few minutes. The larva very much reſembles the perfect inſect." Its legs are long; when taken out of the water it hops: it is very common in the ponds of water in Hyde Park and in ſeveral other places about London. It is of a very particular form, being flattiſh at the belly, and riſing to a ridge on the middle of the back; ſo that when it ſwims, its body has much the reſemblance of a *boat* in figure, whence its vulgar name. It is 8 lines long, 2 broad, and 2½ thick. The belly is jointed, ſtriated, and hairy. Nature has provided it with an offenſive weapon reſembling a ſting, which it thruſts out when hurt, from a large opening at the tail. The head is large and hard. The eyes are of nearly a triangular form. The noſe is a long, green, hollow proboſcis, ending in a hard and ſharp point, which in its natural poſture remains under the belly, and reaches to the middle pair of legs. The outer pair of its wings are of a pale fleſh colour, with ſpots of a dead white; theſe are long, narrow, and ſomewhat tranſparent: they terminate in a roundiſh point, and perfectly cover the whole body. The triangular piece which ſtands between the top of the wings is hard, and perfectly black; the inner wings are broader and ſhorter than the outer; they are thin and perfectly tranſparent, and are of a pale pearl colour. The hinder pair being greatly longer than all the reſt, they ſerve as oars; and nature has tufted them with hair at the end for that purpoſe. This creature moſtly lives in the water, where it preys on ſmall inſects, killing them and ſucking their juices with its proboſcis in the manner of the water ſcorpion and many other aquatic inſects; and it ſeizes its prey violently, and darts with incredible ſwiftneſs to a conſiderable diſtance after it. Though it generally lives in the water, it ſometimes crawls out in good weather; and drying its wings by expanding them in the ſun, takes flight, and becomes an inhabitant of the air, not to be known for the ſame creature, unleſs to thoſe who had accurately obſerved it before; when tired of flying, or in danger of an enemy, it immediately plunges into the water.

* NOTORIETY. *n. ſ.* [*notorieté*, French; from *notorious*.] Public knowledge; public expoſure. —We ſee what a multitude of pagan teſtimonies may be produced for all thoſe remarkable paſſages: and indeed of ſeveral that more than anſwer your expectations, as they were not ſubjects in their own nature ſo expoſed to public *notoriety*. *Addiſon.*

* NOTORIOUS. *adj.* [*notorius*, Latin; *notoire*, French.] Publicly known; evident to the world; apparent; not hidden. It is commonly uſed of things known to their diſadvantage; whence by thoſe who do not know the true ſignification of the word, an atrocious crime is called a *notorious* crime, whether public or ſecret.—What need you make ſuch ado in cloaking a matter too *notorious*. *Whitgifte.*—

The goodneſs of your intercepted packets
You writ to the pope againſt the king; your goodneſs,
Since you provoke me, ſhall be moſt *notorious*.
Shak.

I ſhall have law in Epheſus,
To your *notorious* ſhame. *Shak.*

—In the time of king Edward III. the impediments of the conqueſt of Ireland are *notorious*. *Davies.*—This preſbyterian man of war congratulates a certain *notorious* murther, committed by a zealot of his own devotion. *White.*—We think not fit to condemn the moſt *notorious* malefactor before he hath had licence to propoſe his plea. *Fell.*—What *notorious* vice is there that doth not blemiſh a man's reputation? *Tillotſon.* —The inhabitants of Naples have been always very

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very *notorious* for leading a life of lazineſs and pleaſure. *Addiſon.*—The biſhops have procured ſome ſmall advancement of rents; although it be *notorious* that they do not receive the third penny of the real value. *Swift's Miſcellanies.*

* NOTORIOUSLY. *adj.* [from *notorious.*] Publickly; evidently; openly.—The expoſing himſelf *notoriouſly* did ſometimes change the fortune of the day. *Clarendon.*—This is *notoriouſly* diſcoverable in ſome differences of brake of fern. *Brown.*—Ovid tells us, that the cauſe was *notoriouſly* known at Rome. *Dryden.*—Should the genius of a nation be more fixed in government than in morals, learning, and complexion, which do all *notoriouſly* vary in every age? *Swift*

* NOTORIOUSNESS. *n. ſ.* [from *notorious.*] Public fame; notoriety.

NOTOZEPHYRUS, the South-weſt wind.

NOTRE DAME, [Fr. *i. e. Our Lady.*] the name of 8 towns of France, and 1 of Brazil; which are thus diſtinguiſhed:

1. NOTRE DAME DE CLERY, in the dep. of Loiret, 6 miles NE. of Beaugency, and 9 SW. of Orleans.

2. NOTRE DAME DE COUDUN, in the dep. of Oiſe, and diſtrict of Compiegne; 3 miles N. of Compiegne.

3. NOTRE DAME DE COURSON, in the dep. of Calvados, and diſtrict of Liſieux, 8 miles S. of Liſieux, and 18 ENE. of Falaiſe.

4. NOTRE DAME DE DELIVRANCE, in the dep. of Calvados, 7 m. N. of Caen, and 12 E. of Bayeux.

5. NOTRE DAME DE FRENAY, in the dep. of Calvados; 10½ miles ENE. of Falaiſe, and 13½ SSW. of Liſieux.

6. NOTRE DAME DE LIESSE, in the dep. of Aiſne, and diſtrict of Laon; 9 m. ENE. of Laon.

7. NOTRE DAME DE NIEVES, in Brazil, in the juriſdiction of Fernambuco.

8. NOTRE DAME DE PORT, in the dep. of Lot and Garonne; 10 miles W. of Agen.

9. NOTRE DAME DE ROCHE SERVIERE, in the dep. of the Vendee; 7½ miles W. of Montaigu.

NOTSCHOW, a town of Holſtein.

* *To* NOTT. *v. a.* To ſhear. *Ainſ.*

(1.) NOTTAWAY, a county of Virginia, bounded on the N. and NW. by Amelia county, from which it was taken in 1788; NE. by Dinwiddie; S. and SW. by Lunerberg.

(2.) NOTTAWAY, a river of Virginia, which riſes in Amelia county, and thence running E. by S. joins the Blackwater, 10 miles above its conflux with the Meherrin.

NOTTEBURG, a town of Ruſſia, in Ingria, on an iſland in the lake Ladoga, at the place where the river Neva flows from it. It is ſtrong, has a good citadel, and was capital of the province before Peterſburg was built. Lon. 31. 40. E. Lat. 60. 0. N.

NOTTELEN, a town of Germany, in the circle of Weſtphalia, and late biſhopric of MUNSTER, now ſeculariſed; and after being divided between the K. of Pruſſia, and the princes of Salm-Salm, Salm Kirbourg, &c. as decided by Bonaparte in Aug. 1802, it now (1811) forms a part of the kingdom of Weſtphalia; but how long that arrangement may endure cannot be even conjectured. It is 7 miles W. of Munſter.

(1.) NOTTINGHAM or NOTTINGHAMSHIRE, a county of England, bounded on the E. by Lincolnſhire, on the SE. and S. by Leiceſterſhire, on the W. by Derbyſhire, and on the N. and NW. by Yorkſhire. It extends in length 48 miles, 25 in breadth, and 1010 in compaſs; containing 560,000 acres, 8 hundreds, 9 market-towns, 168 pariſhes, and 450 villages. By the report to Parliament, June 26th 1801, it contained 25,556 houſes; 65,508 males; 68,219 females; in all 133,727 ſouls. No county in England enjoys a pleaſanter and healthier air. The ſoil differs widely in different parts of the country. Towards the W. where lies the foreſt of Sherwood, it is ſandy; and therefore that part of the county is called by the inhabitants the *Sand:* but the S. and E. parts, watered by the Trent and the rivulets, are clayey, and therefore are called the *Clay.* The latter is fruitful both in corn and paſture; the former produces little beſides wood, coal, and ſome lead. The county has a variety of commodities and manufactures, as wool, leather, tallow, butter, cheeſe, coal, marl, cattle, malt, liquorice, ſtockings, glaſs, earthen wares, and ſtrong ale. The principal rivers are the Trent and Idle. The Trent enters the county on the SW. and paſſing through it to the NE. enters Lincolnſhire; the Idle traverſing the N. part of the county. (See IDLE N° 2; and TRENT, N° 1.) The ſpacious foreſt of Sherwood lies in the W. part of the county, and indeed takes up the greateſt part of it. See SHERWOOD. NOTTINGHAM (N° 2.) is the capital of the county.

(2.) NOTTINGHAM, the capital of the above county, is a handſome city and a county of itſelf. The name is derived from the Saxon word *Snottengham,* which ſignifies *caves,* from the caves and apartments anciently dug in the rocks on which the town ſtands. Theſe, being ſoft, eaſily yield to the ſpade and pick-axe; whence the townſmen have excellent cellars for the vaſt quantities of malt liquors made here, and ſent, as well as their malt, to moſt parts of England. The ſituation of the town is very pleaſant, having meadows on the one hand, and hills of a gentle eaſy aſcent on the other. It is well ſupplied with both wood and coal, from the foreſt; and with fiſh by the Trent, which runs about a mile to the S. of it, and has been made navigable for barges; ſo that they receive by it not only great quantities of cheeſe from Warwickſhire and Staffordſhire, but all their heavy goods from the Humber, and even from Hull. Over the Trent is a ſtately ſtone bridge of 19 arches, where the river is very large and deep. The city is of great antiquity, and it had formerly a ſtrong caſtle, in which the Danes, in the time of the heptarchy, held out a ſiege againſt Buthred king of Mercia, Alfred, and Ethelred, his brother, king of the Weſt Saxons. William I. either repaired this fortreſs, or built a new one in the ſame ſpot, in the 2d year of his reign. He committed the cuſtody of it to William Peverell, his natural ſon, whom ſome conſider as the founder. It ſtands on a ſteep rock, at the foot of which runs the Leen. Deering, in his hiſtory of Nottingham, very juſtly explodes the ſtory of *Mortimer's hole,* having been made as a hiding-place for him; and ſhows, that it was

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meant as a private paſſage to the caſtle, to relieve it with men or proviſions in a ſiege. He ſays that it is one continued ſtair-caſe, without any room, or even a place to ſit down on. It was by this paſſage that Edward III. got into the caſtle and ſurpriſed Mortimer and the queen; and from hence, and his being carried away through it, it has its name. Edward IV. greatly enlarged the caſtle, but did not live to complete the buildings he began. Richard III. finiſhed them. It was granted by James I. to Francis Earl of Rutland, who pulled down many of the buildings; but it was ſtill of ſo much ſtrength, that Charles I. in 1642, pitched on it for beginning his operations of war. He ſet up his ſtandard, fixt on the walls of the caſtle, but in a few days removed it, not to Derry Mount, as ſome ſay, but to a cloſe on the N. ſide of the caſtle, without the wall, after which it was for many years called STANDARD CLOSE. The caſtle was afterwards ſequeſtered by the parliament, and the trees in the park cut down. This caſtle was ſo ſtrong that it was never taken by ſtorm. After the civil war, Cromwell ordered it to be demoliſhed. On the reſtoration, the D. of Buckingham, whoſe mother was daughter and heireſs of Francis Earl of Rutland, had it reſtored to him, and ſold it to William Cavendiſh, marquis of Newcaſtle. In 1674 he began the preſent building, and it was finiſhed by Henry his ſon. The expence was about 14,000*l.* It is one of the ſeats of the duke of Newcaſtle. In the park, W. of the caſtle, and facing the Leen, are ſome remains of an ancient building (if it may be ſo called) cut and framed in the rock, ſuppoſed by Dr Stukeley to be a work of the Britons. Many other ancient excavations have been found in other parts of the rocks. The frames for knitting ſtockings were invented by one William Lea of this county, about the beginning of the 17th century; but he, not meeting with the encouragement he expected, went with ſeveral of his workmen to France, on the invitation of Henry IV. The murder of that king, and the troubles which enſued, prevented attention being given to the work. Lea died there, and moſt of his men returned to Nottingham, and the trade has flouriſhed ever ſince, and is now carried on to a very conſiderable extent. The city is noted for its horſe-races on a fine courſe on the N. ſide. The corporation is governed by a mayor, recorder, ſix aldermen, two coroners, two ſheriffs, two chamberlains, and 24 common-council men. It has 3 neat churches, the chief of which is St Mary's; an alms-houſe for 12 poor people; and an hoſpital for 13 widows, founded by John Plumtree, Eſq. in Richard II.'s reign; with a noble town-houſe, ſurrounded with piazzas. A conſiderable trade is carried on in glaſs and earthen wares, and ſtockings, beſides malt, and malt-liquors. Marſhal Tallard, when a priſoner in England, was confined to this town and county. In the duke of Newcaſtle's park there is a ledge of rocks hewn into a church, houſes, chambers, dove-houſes, &c. The altar of the church is a natural rock; and between that and the caſtle there is an hermitage of the like workmanſhip. Upon the ſide of a hill there is a very extraordinary ſort of a houſe, where you enter at the garret, and aſcend to the cellar, which is at the top of the houſe. There are 4 handſome bridges over the Trent and Lind. To keep theſe in repair, and for other public purpoſes, the corporation has good eſtates. Here David II. K. of Scots, when a priſoner, reſided. Lon. 1. 5. W. Lat. 53. 0. N.

(3.) NOTTINGHAM, a townſhip of New Hampſhire, in Rockingham county, incorporated in 1722, 14 miles N. of Exeter, and 25 NW. of Portſmouth; containing 1068 citizens in 1795.

(4.) NOTTINGHAM, the moſt northern town of New Jerſey, in Burlington county, on the E. bank of the Delaware, between Bordentown and Trenton.

(5.) NOTTINGHAM, a town of Maryland, in Prince George's County, on the Patuxent, 16 miles NE. of Piſcataway, and 20 SE. of the city of Waſhington.

(6.) NOTTINGHAM, a townſhip of Pennſylvania, in Cheſter county.

(7.) NOTTINGHAM ISLAND, an iſland in Hudſon's Bay. Lon. 78. 30 W. Lat. 78. 30. N.

(8.) NOTTINGHAM, WEST, a townſhip of New Hampſhire, in Hillſborough county, on the E. bank of the Merrimack, incorporated in 1746, and containing 1064 citizens, in 1795. It is 45 miles NNW. of Boſton.

NOTTINGHAMSHIRE. See NOTTINGHAM, N° 1.

(1.) * NOTUS. *n. ſ.* [Lat.] The ſouthwind.—

With adverſe blaſt upturns them from the ſouth,
Notus and Afer black. *Milton's Par. Loſt.*

(2.) NOTUS, or AUSTER. See AUSTER.

* NOTWHEAT. *n. ſ.* [*not* and *wheat.*] Of wheat there are two ſorts; French, which is bearded, and requireth the beſt ſoil, and *notwheat*, ſo termed becauſe it is unbearded, being contented with a meaner earth. *Carew.*

* NOTWITHSTANDING. *conj.* [This word, though in conformity to other writers called here a conjunction, is properly a participial adjective, as it is compounded of *not* and *withſtanding*, and anſwers exactly to the Latin *non obſtante*; it is moſt properly and analogically uſed in the ablative caſe abſolute with a noun; as, *he is rich notwithſtanding his loſs*; it is not ſo proper to ſay, *he is rich notwithſtanding he has loſt much*; yet this mode of writing is too frequent. *Addiſon* has uſed it; but when a ſentence follows, it is more grammatical to inſert *that*; as, *he is rich notwithſtanding* that *he has loſt much.* When *notwithſtanding* is uſed abſolutely, the expreſſion is elliptical, *this* or *that* being underſtood, as in the following paſſages of *Hooker.*] 1. Without hindrance or obſtruction from.—Thoſe on whom Chriſt beſtowed miraculous cures, were ſo tranſported that their gratitude made them, *notwithſtanding* his prohibition, proclaim the wonders he had done for them. *Decay of Piety.* 2. Although. This uſe is not proper.—A perſon languiſhing under an ill habit of body, may loſe ſeveral ounces of blood, *notwithſtanding* it will weaken him for a time. *Addiſ.* 3. Nevertheleſs; however.—They which honour the law as an image of the wiſdom of God himſelf, are *notwithſtanding* to know that the ſame had an end in Chriſt. *Hooker.*—The knowledge is ſmall which we have on earth concerning things that

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that are done in heaven: *notwithſtanding*, this much we know even of ſaints in heaven, that they pray. *Hooker.*

He hath a tear for pity, and a hand
Open as day for melting charity:
Yet *notwithſtanding*, being incens'd, he's flint;
As humorous as winter. *Shak. Henry* IV.

NOVA ARA. See NOVARA, N° 1.

NOVAC, a town in Iſtria; 15 m. NE. of Rovigno.

(1.) NOVAGLIA, a town in Dalmatia, in the iſle of PAGO.

(2.) NOVAGLIA, OLD, or ZASCHA, a valley in the iſle of Pago.

NOVAIA, a town of Ruſſia, in Tobolſk.

NOVALE. See NOVALLE.

(1.) NOVALESE, a town of France, in the dep. of Mont Blanc, (ci-devant Savoy,) 6 miles WNW. of Chambery.

(2.) NOVALESE, a town of France, in the dep. of the Doria, late principality of Piedmont and marquiſate of Suſa, ſeated on the Doria, 5 miles N. of Suſa.

NOVALLE, a ſmall, rich, and populous town between Padua and Treviſo; 10 miles S. of Trevigio. Lon. 12. 5. E. Lat. 45. 35. N.

NOVALLERA. See NOVELLARA.

NOVANIUM, an ancient municipal town of Dalmatia, built by the Romans, in the territory now called IMOSCHI.

(1.) NOVARA, an ancient and ſtrong city of Italy, capital of the ci-devant NOVARESE, now annexed to the French empire, and included in the depart. of the Seſia. Some ſay, that this city was built by the Trojans, and called NOVA ARA, i. e. *the New Altar*, becauſe they had erected there a temple to Venus. Tacitus mentions its being made a municipal city by the Romans; and there are many inſcriptions extant, which prove its ancient ſplendor. It is now a ſmall but well-built town, ſituated on a little eminence, in a fine country, betwixt two rivers, very well fortified. It is remarkable for the ſeveral ſieges ſuſtained in paſt times, and for being the birth-place of Peter Lombard. (See LOMBARD.) It was taken by the French republicans under Gen. Victor, on the 6th Dec. 1798, previous to the erection of the ſhort-lived PIEDMONTESE REPUBLIC. After the overthrow of that democracy, it was again taken by the French under Gen. Murat, on the 30th May, 1800. It has a cathedral and 17 churches, and had 18 convents before. It lies 8 miles NE. of Vercelli, and 23 WSW. of Milan. Lon. 8. 35. E. Lat. 45. 25. N.

(2.) NOVARA, or } a ci-devant prov. of Italy;
The NOVARESE, } formerly included in the duchy of Milan, and ſtill placed by Dr Brookes, J. Walker, the Rev. C. Cruttwell, and moſt modern geographers, in that duchy; which is a miſtake, as previous to the late revolutions in Italy, it was long held, with its capital, (N° 1.) as an imperial fief, by the king of Sardinia, and conſtituted part of his dominions in the Piedmonteſe. It is now included in the French empire, and dep. of the Seſia.

NOUART, a town of France, in the dep. of the Ardennes; 9 miles NNE. of Grandpré.

NOVA SCOTIA. See SCOTIA, N° 3.

NOVATIAN, a hereſiarch of the 3d century, who made much noiſe, was firſt a Pagan philoſopher. He was baptized in bed when dangerouſly ill: recovering, he was afterwards ordained prieſt of the church of Rome, his biſhop having obtained this favour for him, which the clergy and people were not diſpoſed to grant. By his wit, knowledge, and eloquence, he might have been peculiarly ſerviceable to the church, had he not with cowardice ſhrunk from perſecution. His ambition to be made a biſhop likewiſe miſled him. On the death of Fabian Bp. of Rome, he wrote a letter to St Cyprian; but the promotion of Cornelius to that dignity excited his envy and jealouſy to ſuch a pitch, that he ſeparated from the new biſhop, and from all who profeſſed to believe, what Novatian ſtrenuouſly denied, that the church could receive thoſe again who had been guilty of idolatry. He ſoon got a number of followers among the laity, and ſome even among the clergy. NOVATUS, a prieſt of Carthage joined him, with his adherents. He got himſelf conſecrated biſhop of Rome in a moſt infamous and clandeſtine manner, by three weak men whom he had impoſed upon, and one of whom did penance for his concern in the buſineſs. But he never was acknowledged as biſhop of Rome, Cornelius being confirmed, whilſt he was condemned and excommunicated. He ſtill, however, taught his doctrine, and at length became the head of the party which bears his name. Beſides the letter mentioned above, St Jerome ſays he wrote on the *Paſſover*, on the *Sabbath*, on *Circumciſion*, on the *High Prieſts*, on *Prayer*, on *Jewiſh meals*, and on *Firmneſs of mind*, &c. with a large treatiſe *on the Trinity*. None of them appear under his own name, and ſome are thought ſpurious.

NOVATIANI, } a ſect of ancient heretics, that
NOVATIANS, } aroſe in the end of the 3d century, ſo called from NOVATIAN. (See the laſt article.) They were called alſo *Cathari*, from καθαρὸς, *pure*, q. d. PURITANS. Novatian firſt ſeparated from the communion of pope Cornelius, on pretence of his being too eaſy in admitting to repentance thoſe who had fallen off in times of perſecution. Novatus coming to Rome, joined Novatian; and both maintained, that there was no other admiſſion into the church but by repentance in baptiſm; grounding their opinion on that of St Paul: "It is impoſſible for thoſe once enlightened, and who have taſted the heavenly gift, if they fall away, to renew themſelves by repentance." Not that they denied but a perſon, fallen into any ſin, might obtain pardon by repentance; for they themſelves recommend repentance in the ſtrongeſt terms; but their doctrine was, that the church had it not in its power to receive ſinners into its communion, as having no way of remitting ſins but by baptiſm; which once received could not be repeated. In proceſs of time the *Novatians* moderated the rigour of their maſter's doctrine, and only refuſed abſolution to very great ſinners. The two leaders were proſcribed, and declared heretics, not for excluding penitents from communion, but for denying that the church had a power of remitting ſins. See NOVATUS.

(1.) * NOVATION. *n. ſ.* [*novatio*, Lat.] The introduction of ſomething new.

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(2.) NOVATION, or INNOVATION, in civil law, denotes the change of one kind of obligation for another; as when a promiſe is accepted inſtead of a written obligation.

* NOVATOR. *n. ſ.* [Lat.] The introducer of ſomething new.

NOVATUS, a prieſt of Carthage, in the 3d century, who, to avoid being puniſhed for a crime, joined with the deacon, named *Feliciſſimus*, againſt St Cyprian. He went to Rome in 251, and there found NOVATIAN, with whom he contracted a friendſhip; and afterwards promoted his conſecration to the ſee of Rome. This produced a very great ſchiſm. See NOVATIANS.

NOVAVOL, a town of Samogitia, 40 miles S. of Roſienne.

NOVA ZEMBLA. See ZEMBLA.

NOUCONGUE, a mountain of Thibet.

NOUDAR. See NODAR.

NOUE, Francis DE LA, a brave ſoldier under Henry IV. of France, who gained great reputation in that monarch's wars. He was killed before Lamballe, but left a volume of *Political and Military Eſſays*, which have been often printed.

NOVE, a village of Maritime Auſtria, on the Brenta, in Vicentino, famous for porcelain wares.

NOUEE, a town of France, in the dep. of Morbihan, 3 miles NNW. of Joſſelin.

NOVEGRADE. See NOVIGRAD.

(1.) * NOVEL. *adj.* [*novellus*, Lat. *novelle*, Fr.] 1. New; not ancient; not uſed of old; unuſual. —The Preſbyterians are exacters of ſubmiſſion to their *novel* injunctions, before they are ſtamped with the authority of laws. *King Charles.*—It is no *novel* uſurpation, but though void of other title, has the preſcription of many ages. *Decay of Piety.*—Such is the conſtant ſtrain of this bleſſed ſaint, who everywhere brands the Arian doctrine, as a new, *novel*, upſtart hereſy, folly and madneſs. *Waterland.* 2. [In the civil law.] Appendant to the code, and of later enaction.—By the *novel* conſtitutions, burial may not be denied to any one. *Ayliffe's Parergon.*

(2.) * NOVEL. *n. ſ.* [*nouvelle*, Fr.] 1. A ſmall tale, generally of love.—Nothing of a foreign nature, like the trifling *novels* which Arioſto inſerted in his poems. *Dryden.*—

Her mangled fame in barb'rous paſtime loſt,
The coxcomb's *novel*, and the drunkard's toaſt.
Prior.

2. A law annexed to the code.—By the civil law, no one was to be ordained a preſbyter till he was thirty-five years of age; though by a later *novel* it was ſufficient if he was above thirty. *Ayliffe.*

(3.) *A* NOVEL is a fictitious narrative in proſe, which profeſſes to exhibit the natural workings of the human heart, the happineſs and miſery of private life, and, above all, the nature of the affection called *Love*, and the conſequences of indulging it in certain circumſtances. The novel ſprung out of the old romance, and has been cenſured for inſipidity, as its parent was for extravagance. (See ROMANCE.) That the moſt of thoſe abſurd things, which, under this title, are daily iſſuing from the preſs, deſerve all the contempt with which they can be treated, is a poſition which we are not inclined to controvert; but we cannot admit that any ſpecies of writing is in itſelf *inſipid*, merely becauſe numbers have attempted it without ſucceſs. The heroic poems of Blackmore are univerſally known to be contemptible performances; and if we had before us all the heroic poetry that has ever been written, how many thouſands of volumes ſhould we have as mean as either *Prince Arthur*, *King Arthur*, *Elize*, or *Alfred?* Yet no critic has hitherto dared to maintain that heroic poetry is an inſipid ſpecies of writing. But to the novel objections have been urged of more importance than its inſipidity. It has been often affirmed, with learned ſolemnity, that the peruſal of novels tends to corrupt the youth of both ſexes; to produce effeminacy in men, and extravagant notions of the happineſs of love in women; that it diverts the minds of the former from more ſerious and uſeful ſtudies, and expoſes the latter to the arts of ſeduction. (See EDUCATION.) That there are too many novels to which this objection is applicable in its full force, is a fact which cannot be denied; but when it is admitted, let not theſe performances be again accuſed of *inſipidity*; for were they inſipid they could have no ſuch conſequences. It is by laying faſt hold of the heart that they lead it aſtray. That a novel might be written ſo as to intereſt the heart in behalf of virtue, as much as any one has ever warped it to the ſide of vice, is a truth which no man will call in queſtion who has any knowledge of human nature; and therefore we are decidedly of opinion, that there may be novels worthy at once of the peruſal of inexperienced youth and hoary wiſdom. A critic, by no means too indulgent to works of fancy, and among whoſe failings laxity of morals has never been numbered, thus expreſſes himſelf on the ſubject of novel writing: "Theſe familiar hiſtories may perhaps be of greater uſe than the ſolemnities of profeſſed morality, and convey the knowledge of vice and virtue with more efficacy than axioms and definitions. But if the power of example is ſo great as to take poſſeſſion of the memory by a kind of violence, and produce effects almoſt without the intervention of the will, care ought to be taken, that, when the choice is unreſtrained, the beſt examples only ſhould be exhibited; and that what is likely to operate ſo ſtrongly ſhould not be miſchievous or uncertain in its effects." *(Johnſon.)* We have ſaid, that the novel profeſſes above all things to exhibit the nature of love, and its conſequences. Whether this be eſſential to ſuch performances, may perhaps be reaſonably queſtioned; but it has been made an important part of the drama in moſt novels, and, we think, with great propriety. It is the object of the noveliſt to give a true picture of life, diverſified only by accidents that daily happen in the world, and influenced by paſſions and qualities which are really to be found in converſing with mankind. To accompliſh this object, he conceives a hero or heroine, whom he places in a certain rank of life, endues with certain qualities of body and mind, and conducts through many viciſſitudes of fortune, either to the ſummit of happineſs or to the abyſs of miſery, according to the paſſion which he wiſhes to excite in his readers. In the modern novel, this hero or heroine is never placed on a throne, or buried in a cottage;

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cottage; because to the monarch and the cottager difficulties seldom occur which can deeply interest the majority of readers. But among the virtuous part of the intermediate orders of society, the passion of *love* seldom fails, at some period of life, to take possession of the hearts of both sexes; and wherever it has place, it must be productive of happiness or of misery. In the proper management of this passion consists much of the difficulty of the novel writer. He must exhibit his hero as feeling all the pangs and pleasures of love, as sometimes animated with hope, and sometimes ready to sink into despair, but always exerting himself to obtain the gratification of his wishes. In doing this, care should be taken, either that he never transgress the laws of virtue, or at least that he never transgress them with impunity. It is justly considered as the greatest excellency of art to imitate nature; but it is necessary to distinguish those parts of nature which are most proper for imitation: greater care is still required in representing life, which is so often discoloured by passion or deformed by wickedness. "If the world be promiscuously described (says Johnson), I cannot perceive of what use it can be to read the account; or why it may not be as safe to turn the eye immediately upon mankind, as upon a mirror, which shows all that presents itself without discrimination. It is therefore not a sufficient vindication of a character, that it is drawn as it appears; for many characters ought never to be drawn: nor of a narrative, that the train of events is agreeable to observation; for that observation which is called *knowledge of the world* will be found much oftener to make men cunning than good. These writings ought surely not only to show mankind, but to provide that they may be seen hereafter with less hazard; to teach the means of avoiding the snares which are laid by TREACHERY for INNOCENCE, without inducing any wish for that superiority with which the betrayer flatters his vanity; to give the power of counteracting fraud, without the temptation to practise it; to initiate youth by mock encounters in the art of necessary defence; and to increase prudence without impairing virtue. Many writers, for the sake of following nature, so mingle good and bad qualities in their principal personages, that they are both equally conspicuous; and as we accompany them through their adventures with delight, and are led by degrees to interest ourselves in their favour, we lose the abhorrence of their faults, because they do not hinder our pleasures, or perhaps regard them with some kindness for being united with so much merit. There have been men indeed splendidly wicked, whose endowments threw a brightness on their crimes, and whom scarce any villany made perfectly detestable, because they never could be wholly divested of their excellencies: but such have been in all ages the great corrupters of the world; and their resemblance ought no more to be preserved than the art of murdering without pain. In narratives where historical veracity has no place, there should be exhibited the most perfect idea of virtue; of virtue not angelical, nor above probability (for what we cannot credit we shall never imitate), but the highest and purest that humanity can reach; which, exercised in such trials as the various revolutions of things shall bring upon it, may, by conquering some calamities and enduring others, teach us what we may hope, and what we can perform. Vice (for vice is necessary to be shown) should always disgust; nor should the graces of gaiety, or the dignity of courage, be so united with it as to reconcile it to the mind. Wherever it appears, it should raise hatred by the malignity of its practices, and contempt by the meanness of its stratagems; for while it is supported by either parts or spirit, it will seldom be heartily abhorred." A well composed novel is entitled to the appellation of a *poem*, though it be written in prose, and in a style not remarkable for elevation. The business of the novelist is to interest the heart by a display of the incidents of common life. In doing this, he must exhibit scenes that are probable, and record speeches that are natural. He is not at liberty to invent, but only to select, objects, and to cull from the mass of mankind those individuals upon which the attention ought most to be employed. The more closely he adheres to this rule, the more deeply does he interest us in his narrative; because every reader sees at once, that it is possible he may at some time or other be in circumstances nearly resembling those of the hero of the tale.

(4.) NOVEL, in the civil law (§ 2. *def.* 2.), a term used for the constitutions of several emperors, more particularly those of Justinian. They were called *novels*, either from their producing a great alteration in the face of the ancient law, or because they were made on new cases, and after the revival of the ancient code.

NOVELDA, a town of Spain, in Valencia.

* NOVELIST. *n. s.* [from *novel.*] 1. Innovator; assertor of novelty.—Telesius, who hath renewed the philosophy of Parmenides, is the best of *novelists*. *Bacon.*—The fathers of this synod were not schismatical, or *novelists* in the matter of the sabbath. *White.*—

Aristotle rose,
Who nature's secrets to the world did teach,
Yet that great soul our *novelists* impeach.
Denham.

—The fooleries of some affected *novelist* have discredited new discoveries. *Glanville.*—The abettors and favourers of them he ranks with the Abonites, Argemonites, and Samosaterians, condemn'd hereticks, and brands them as *novelists* of late appearing. *Waterland.* 2. A writer of novels.

(1.) NOVELLARA, or NOVALLERA, a ci-devant principality of Italy, in the duchy of Reggio, held as an imperial fief by the D. of Modena, till the late revolutions of Italy. It is now included in the kingdom of Italy, and department of Crostolo; and contains one town and several villages.

(2.) NOVELLARA, a town of Italy, with a castle, in the dep. of Crostolo, district and late duchy of Reggio, ci-devant capital of the above principality; seated on a river, 9 miles N. of Reggio. Lon. 11. 4. E. Lat. 44. 48. N.

(1.) * NOVELTY. *n. s.* [*nouveauté*, French.] 1. Newness; state of being unknown to former times.—Doing well, their actions are freed from prejudice or *novelty*. *Hooker.* 2. Freshness; recentness; newness with respect to a particular person.

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perſon.—*Novelty* is only in requeſt; and it is dangerous to be aged in any kind of courſe. *Shak.*—As religion entertains our ſpeculations with great objects, ſo it entertains them with new; and *novelty* is the great parent of pleaſure. *South.*

(2.) NOVELTY, or NEWNESS. Of all the circumſtances that raiſe emotions, not excepting beauty, nor even greatneſs (ſays Lord Kames, in his *Elem. of Criticiſm*), novelty hath the moſt powerful influence. A new object produces inſtantaneouſly an emotion termed WONDER, which totally occupies the mind, and for a time excludes all other objects. Converſation among the vulgar never is more intereſting than when it turns upon ſtrange objects and extraordinary events. Men tear themſelves from their native country in ſearch of things rare and new; and novelty converts into a pleaſure the fatigues and even perils of travelling. To what cauſe ſhall we aſcribe theſe ſingular appearances? To curioſity undoubtedly; a principle implanted in human nature for a purpoſe extremely beneficial, that of acquiring knowledge; and the emotion of wonder, raiſed by new and ſtrange objects, inflames our curioſity to know more of ſuch objects. During infancy, every new object is probably the occaſion of wonder, in ſome degree; becauſe, during infancy, every object at firſt ſight is ſtrange as well as new: but as objects are rendered familiar by cuſtom, we ceaſe by degrees to wonder at new appearances, if they have any reſemblance to what we are acquainted with; for a thing muſt be ſingular as well as new, to raiſe our wonder. In explaining the effects of novelty, the place a being occupies in the ſcale of exiſtence is a material circumſtance. Novelty in the individuals of a low claſs is perceived with indifference, or with a very ſlight emotion: thus a pebble, however ſingular in its appearance, ſcarce moves our wonder. The emotion riſes with the rank of the object; and, other circumſtances being equal, is ſtrongeſt in the higheſt order of exiſtence: a ſtrange inſect affects us more than a ſtrange vegetable; and a ſtrange quadruped more than a ſtrange inſect. However natural novelty may be, it is a matter of experience, that thoſe who reliſh it the moſt are careful to conceal its influence. Love of novelty, it is true, prevails in children, in idlers, and in men of ſhallow underſtanding; and yet, after all, why ſhould one be aſhamed of indulging a natural propenſity? A diſtinction will afford a ſatisfactory anſwer. No man is aſhamed of curioſity when it is indulged to acquire knowledge. But to prefer any thing merely becauſe it is *new*, ſhows a mean taſte which one ought to be aſhamed of: vanity is commonly at the bottom, which leads thoſe who are deficient in taſte to prefer things odd, rare, or ſingular, to diſtinguiſh themſelves from others. And in fact, that appetite reigns chiefly among perſons of a mean taſte, who are ignorant of refined and elegant pleaſures.—On the whole, deſigning wiſdom is nowhere more viſible than in this part of the human frame. If new objects did not affect us in a very peculiar manner, their impreſſions would be ſo ſlight as ſcarce to be of any uſe in life: on the other hand, did objects continue to affect us as deeply as at firſt, the mind would be totally engroſſed with them, and have no room left either for action or reflection.

NOVEMASTO, a town of Poland, in Lemberg; 40 miles WSW. of Lemberg.

* NOVEMBER. *n. ſ.* [Latin.] The eleventh month of the year, or the ninth reckoned from March, which was, when the Romans named the months, accounted the firſt.—*November* is drawn in a garment of changeable green, and black upon his head. *Peacham.*

NOVEMIASECZKO, a town of Samogitia, 26 miles NE. of Medniki.

NOVEMVIRI, nine magiſtrates of Athens, whoſe government laſted but for one year; the firſt of whom was called *archon*, or *prince*; the ſecond *baſileus*, or king; the third *polemarchus*, or general of the army: the other ſix were called *theſmothetæ*, or lawgivers. They took an oath to obſerve the laws; and, in caſe of failure, obliged themſelves to beſtow upon the commonwealth a ſtatue of gold as big as themſelves. Thoſe who diſcharged their office with honour were received into the number of the ſenators of Areopagus.

* NOVENARY. *n. ſ.* [*novenarius*, Lat.] Number of nine; nine collectively.—Ptolemy by parts and numbers implieth climacterical years; that is, ſeptenaries and *novenaries*. *Brown.*—Looking upon them as in their original differences and combinations, and as ſelected out of a neutral ſtock of nine quaternions, or four *novenaries*, their nature and differences lie moſt obvious to be underſtood.

NOVENTO, a village of Maritime Auſtria, near Padua.

* NOVERCAL. *adj.* [*novercalis*, from *noverca*, Latin.] Having the manner of a ſtepmother; beſeeming a ſtepmother.—When the whole tribe of birds, by incubation, produce their young, it is a wonderful deviation, that ſome few families ſhould do it in a more *novercal* way. *Derham.*

(1.) NOVES, a town of France, in the dep. of the Mouths of the Rhone, on the Durance; 6 miles SE. of Avignon.

(2.) NOVES, a town of Spain, in New Caſtile.

* NOUGHT. *n. ſ.* [*ne aught*, not any thing, Saxon; as therefore we write *aught*, not *ought*, for *any thing*, we ſhould, according to analogy, write *naught*, not *nought*, for *nothing*; but a cuſtom has irreverſibly prevailed of uſing *naught* for *bad*, and *nought* for *nothing*.] 1. Not any thing; nothing.—

Bad is the world, and it will come to *nought*. *Shak.*

As knowing *nought*, like dogs, but following. *Shak.*

—Ye are of nothing, and your work of *nought*. *Iſ.* xli. 23.—

Be fruſtrate all ye ſtratagems of hell,
And deviliſh machinations come to *nought*. *Milt.*

2. In no degree. A kind of adverbial ſignification, which *nothing* has ſometimes.—

To wealth or ſovereign power he *nought* apply'd. *Fairfax.*

3. *To ſet at* NOUGHT. Not to value; to ſlight; to ſcorn; to diſregard.—Ye have *ſet at nought* all my counſel, and would none of my reproof. *Prov.* i. 25.

NOVGOROD. See NOVOGOROD, N° 1—4.

NOUHAVEND. See NEHAVEND.

(1.) NOVI, a town of Italy, in Liguria, on the confines

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confines of the Milaneſe. It was taken by the Piedmonteſe in 1746. Lon. 8. 48. E. Lat. 44. 45. N.

(2.) Novi, a fortified town of Croatia, on the left bank of the Unna; 45 miles SE. of Carlſtadt, and 70 NW. of Seraja.

(3.) Novi Alt, a town of Croatia on the right bank of the Unna, oppoſite Novi.

(4.) Novi Bazar, a conſiderable town of European Turkey in Servia, near the Oreſco. Lon. 20. 24. E. Lat. 43. 25. N.

(1.) * NOVICE. *n. ſ.* [*novice*, Fr. *novitius*, Lat.] 1. One not acquainted with any thing; a freſh man; one in the rudiments of any knowledge.—

Triple-twin'd whore! 'tis thou
Haſt ſold me to this *novice*. *Shak.*
Bring me to the ſight of Iſabella,
A *novice* of this place. *Shak.*
You are *novices*; 'tis a world to ſee
How tame, when men and women are alone,
A meacock wretch can make the curſteſt ſhrew. *Shak.*

—We have *novices* and apprentices, that the ſucceſſion of the former employed men do not fail. *Bacon.*—If any unexperienced young *novice* happens into the fatal neighbourhood of ſuch peſts, preſently they are plying his full purſe and his empty pate. *South.*—

I am young, a *novice* in the trade,
The fool of love, unpractis'd to perſuade. *Dryd.*

—In theſe experiments I have ſet down ſuch circumſtances, by which either the phenomenon might be rendered more conſpicuous, or a *novice* might more eaſily try them. *Newton.* 2. One who has entered a religious houſe, but not yet taken the vow; a probationer.

(2.) Novices, (§ 1. *def.* 2.) in nunneries, wear white veils: the reſt black. In ſome convents, the ſub-prior has the direction of the novices.

(3.) Novices, or clerks in arms, in the ancient order of knighthood, went through a kind of apprenticeſhip ere they were admitted knights.—See Knight.

NOVICIATE. See Novitiate.

NOVICII, or Novitii, in the ancient Roman militia, young raw ſoldiers, diſtinguiſhed by this appellation from the veterans.

(1, 2.) NOVIGRAD, a ſmall but ſtrong town of Dalmatia, with a caſtle ſubject to the Turks; ſeated on a lake of the ſame name, near the gulph of Venice. Lon. 16. 45. E. Lat. 44. 30. N.

(3, 4.) Novigrad, a ſmall but ſtrong town of Upper Hungary, capital of a county of the ſame name, with a good caſtle, ſeated on a mountain near the Danube. Lon. 18. 10. E. Lat. 40 50. N.

(5.) Novigrad, a very ſtrong place of Servia, ſubject to the Turks; ſeated near the Danube. Lon. 26. 5. E. Lat. 45. 5. N.

(6.) Novigrad, a town of Sclavonia.

NOVIGRADT, a town in the ci-devant Venetian Dalmatia. In 1646 it was taken by the Turks; but retaken, and its caſtle razed in 1647, by the Venetians. Lon. 17. 32. E. Lat. 44, 28. N.

NOVIODUNUM, in ancient geography, the name of 7 towns, moſtly in Gaul; viz. 1. A town of the Ædui, commodiouſly ſeated on the Liguris, (*Cæſar*), the Nivernun of Antonine; now called Nevers, on the Loire: 2. A town of the Arlerci Diablintes, in Gallia Celtica, (*Antonine*, *Ptolemy*:) called *Noningentum Rotrudum* by the moderns, and Nogente le Rotrou, late capital of Perche; 3. A town of the Bituriges, (*Cæſar*): now called *Nueve ſur Baranion*: 15 miles N. of Bourges. 4. A town of Mœſia Inferior, (*Ptolemy*), ſituated on the Iſter: now Nivorz. 5. A town of Pannonia Superior, (*Antonine*); now Gurkfeld in Carinthia. 6. *Noviodunum Sueſſionum*, the ſame with *Auguſta Sueſſionum*. 7. A town of the Veromandui in Gallia Belgica, (*Cæſar*): now called Noyon.

NOVIOMAGUS, a name given, on Antonine's pillar, to 4 ancient towns of Britain and Gaul called *Neomagus* by Ptolemy. See Neomagus, N° 1—4.

NOVION, a town of France, in the dep. of the Ardennes; 6 miles N. of Rethel.

NOVISELLO, a town of Hungary, on the Danube; 4 miles SW. of Bacs.

NOVITA, a mountainous diſtrict of Peru, abounding with platina.

(1.) * NOVITIATE. *n. ſ.* [*novitiat*, French.] 1. The ſtate of a novice; the time in which the rudiments are learned.—This is ſo great a maſterpiece in ſin, that he muſt have paſſed his tyrocinium or *novitiate* in ſinning, before he come to this, be he never ſo quick a proficient. *South.* The time ſpent in a religious houſe, by way of trial, before the vow is taken.

(2.) Novitiate, or Noviciate, (§ 1, *Def.* 2.) is a year of probation appointed for the trial of novices, whether they have a vocation, and the neceſſary qualities for living up to the rule; the obſervation whereof they are to bind themſelves to by vow. The noviciate laſts more than a year in ſome houſes. It is eſteemed the bed of the civil death of a novice, who expires to the world by profeſſion.

NOVITO, a river of Naples which runs into the ſea, 16 miles E. of Girace.

* NOVITY. *n. ſ.* [*novitas*, Latin.] Newneſs; novelty.—Some conceive ſhe might not yet be certain that only man was privileged with ſpeech, and being in the *novity* of the creation and unexperience of all things, might not be affrighted to hear a ſerpent ſpeak. *Brown.*

NOU-KIANG, the Chineſe name of the river Ava.

* NOUL. The crown of the head.

* NOULD. Ne would. Would not. *Spenſer.*

NOULENSKOI, a town of Ruſſia, in Vologda; 34 miles NW. of Vologda.

NOUMENIA. See Neomenia, N° 1.

(1.) * NOUN. *n. ſ.* [*noun*, old French; *nomen*, Latin.] The name of any thing in grammar.—A *noun* is the name of a thing, whether ſubſtance, mode or relation, which in ſpeech is uſed to ſignify the ſame when there is occaſion to affirm or deny any thing about it, or to expreſs any relation it has to any other thing. *Clarke.*—Thou haſt men about thee, that uſually talk of a *noun* and a verb, and ſuch abominable words as no chriſtian ear can endure to hear. *Shak. Henry VI.*—

The boy who ſcarce had paid his entrance down,
To his proud pedant had declined a *noun*. *Dryd.*

(2.) Noun. See Adjective, English Language, Language *Sect.* IV, and Substantive.

NOVOCOMENSES, } See Como, N° 2, and
NOVOCOMUM. } Comum.

NOVODVAR.

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NOVODVAR, a town of Hungary 4 miles N. of Cſakathurn.

(1) NOVOGOROD, one of the moſt ancient cities in Ruſſia; formerly called *Novogorod Weliki*, or the *Great Novogorod*, capital of the province, N° 6, now preſents to the intelligent traveller a ſtriking inſtance of fallen grandeur. According to Neſtor, the earlieſt of the Ruſſian hiſtorians, it was built at the ſame time with Kiof, in the middle of the 5th century, by a Sclavonian horde, who according to Procopius, iſſued from the banks of the Volga. Its antiquity is clearly proved by a paſſage in the Gothic hiſtorian Jornandes, in which it is called *Civitas Nova*, or new town. In the 9th century, Ruric the firſt great duke of Ruſſia reduced it, and made it the metropolis of his vaſt dominion. On his death, in 880, or 879, the ſeat of government was removed, under his ſon Igor, then an infant, to Kiof; and Novogorod continued, for above a century, under governors nominated by the great dukes, until in 970, when Svatoſlaf, the ſon of Igor, created his third ſon Volodimir duke of Novogorod: the latter, ſucceeding his father in the throne of Ruſſia, ceded the town to his ſon Yaroſlaf, who in 1036 granted to the inhabitants very conſiderable privileges, that laid the foundation of that extraordinary degree of liberty which they afterwards gradually obtained. From this period Novogorod was for a long time governed by its own dukes: theſe ſovereigns were at firſt ſubordinate to the great dukes who reſided at Kiof and Volodimir; but afterwards, as the town increaſed in population and wealth, they gradually uſurped an abſolute independency. It continued in a flouriſhing ſtate until the middle of the 15th century: but the great dukes of Ruſſia, who ſtill retained the title of dukes of Novogorod, having transferred their reſidence from Kiof to Volodimir, and afterwards to Moſcow, laid claim to its feudal ſovereignty; a demand which the inhabitants ſometimes put off by compoſition, ſometimes by reſiſtance, but were often compelled to acknowledge. At length, however, the great duke became abſolute ſovereign of Novogorod, though the oſtenſible forms of government were ſtill preſerved. It even then, however, continued to be the largeſt and moſt commercial city of Ruſſia. An idea of its population then, when compared with its preſent declined ſtate, may be obtained from the fact, that in 1508 above 15,000 perſons died of an epidemical diſorder; more than double the number of its preſent inhabitants. In its moſt flouriſhing condition it contained at leaſt 400,000 ſouls. Its ruin was brought on by John Baſiliowitz II. and completed by the foundation of Peterſburg. It is ſurrounded by a rampart of earth, with a range of old towers at regular diſtances, forming a circumference of ſcarcely a mile and an half; and even this inconſiderable circle includes much open ſpace, and many houſes not inhabited. As Novogorod was built after the manner of the ancient towns of this country in the Aſiatic ſtyle, this rampart, like that of the Semlainogorod at Moſcow, probably incloſed ſeveral interior circles. Without it was a vaſt extenſive ſuburb, which reached to the diſtance of ſix miles, and included within its circuit all the convents and churches, the ancient ducal palace and other ſtructures, that now make a ſplendid but ſolitary appearance, as they lie ſcattered in the adjacent plain. Novogorod ſtretches on both ſides of the Volkof, a beautiful river of conſiderable depth and rapidity, and ſomewhat broader than the Thames at Windſor. This river ſeparates the town into two diviſions, the trading part and the quarter of St Sophia, which are united by means of a bridge, partly wooden and partly brick.

(2, 3.) NOVOGOROD NIZNEI; a city and province of Ruſſia. (See NISHNEI, N° 1. and 2.) The city was built by the Grand Duke, George Uſewoloditz, and many of the Ruſſian princes reſided and were buried in it. It has 2 cathedrals, 28 churches, and 5 convents. It has a caſtle and ſtone-walls, with a good trade, and the ſhops are elegant and richly furniſhed. In 1715 great part of it was burnt, and ſeveral thouſand perſons periſhed. It lies 220 miles E. of Moſcow, and 492 ENE. of Peterſburg. Lon. 61. 40. E. Ferro. Lat. 56. 18. N.

(4.) NOVOGOROD SERPSKOI, or SIVERSKOI, a province of Ruſſia, in Siberia, bounded on the N. by thoſe of Smolenſk and Mogilev, on the NW. by Mogilev; SW. and S. by Tchernigoffkoi and E. by Orlof, Kurſk, and Charkof. It is 160 miles long, and from 60 to 72 broad. Lon. 49. 10. to 52. 20. E. of Ferro. Lat. 50. 50. to 53. 25. N.

(5.) NOVOGOROD SERPSKOI, or } a ſtrong town
(5.) NOVOGOROD SIEVERSKOI, } of the Ruſſian empire, and capital of the above province, ſeated on the Dubica. Lon. 33. 20. E. Lat. 52. 30. N.

(6.) NOVOGOROD VELEKI, or } a province of
(6.) NOVOGOROD WELICKI, } Moſcow, bounded on the N. by Ingria; on the E. by part of the duchy of Belozero, and that of Tuera, which alſo bounds it on the S. with the province of Rzeva; and on the W. by Pleſcow. It was formerly an independent republic, but was reduced by John Baſiliowitz II. It is full of lakes and foreſts; however, there are ſome places which produce corn, flax, hemp, honey, and wax.

NOVOGORODECK, a large town of Lithuania, and capital of a palatinate of the ſame name, ſituated in a vaſt plain. It was demoliſhed in 1314 and 1390. It is now annexed to the Ruſſian empire. It lies 68 miles E. of Grodno, 200 ESE. of Konigſberg, and 200 ENE. of Warſaw. Lon. 25. 30. E. Lat. 53. 45. N.

NOVOGORODSKOI, a province of Ruſſia, bounded N. by that of Olenetz, NW. by Peterſburg, SW. by Pſkov, SE. by Tuer, and E. by Vologda; 360 miles long, and about 160 broad. Lon. 47 to 57. 30. E. of Ferro. Lat. 57. 10. to 61. 10. N.

NOVOGRIGOREVSKOE, a town of Ruſſia, in the province of Ekaterinoſlaf, 72 miles NW. of Cherſon.

NOVOGRODECK. See NOVOGORODECK.

NOVOI, an iſland in the Caſpian Sea. Lon. 69. 40. E. of Ferro. Lat. 44. 50. N.

NOVO-MIRGOROD, a town of Ruſſia, in Ekaterinoſlaf; 136 miles WNW. of Ekaterinoſlaf.

NOVOMOSKOUSK, a town of Ruſſia in Ekaterinoſlaf, on the Dnieper; 16 miles N. of Ekaterinoſlaf.

NOVOMST, a town of Ruſſia, in Novogorod Sieverſkoi; 16 miles NW. of Novogorod.

NOVORZEV, a town of Ruſſia in Pſkov.

NOVOSEL,

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NOVOSEL, a town of Turkey, in Romania.
NOVOSIL, a town of Ruſſia, in Tula.
NOVOUSOLE, a town of Ruſſia, in Perm.
NOUPRA, a mountain of Thibet.
NOURDYA, a town of Perſia, in Choraſan.

(1.) * *To* NOURISH. *v. a.* [*nourir*, French; *nutrio*, Lat.] 1. To increaſe or ſupport by food or aliment of any kind.—He planteth an aſh, and the rain doth *nouriſh* it. *If.* xliv. 14.

Thro' her *nouriſh'd* powers enlarg'd by thee,
She ſprings aloft. *Thomſon.*

—You are to honour, improve, and perfect the ſpirit that is within you: you are to prepare it for the kingdom of heaven, to *nouriſh* it with the love of God and of virtue, to adorn it with good works, and to make it as holy and heavenly as you can. *Law.* 2. To ſupport: to maintain.—

Whilſt I in Ireland *nouriſh* a mighty band;
I will ſtir up in England ſome black ſtorm. *Shak.*

Him will I follow, and this houſe forego
That *nouriſht* me a maid. *Chapman.*

—Pharaoh's daughter took him up, and *nouriſhed* him for her own ſon. *Acts* vii. 21. 3. To encourage; to foment. Out of uſe.—What madneſs was it with ſuch proofs to *nouriſh* their contentions, when there were ſuch effectual means to end all controverſy? *Hooker.*

In ſoothing them, we *nouriſh* 'gainſt our ſenate
The cockle of rebellion. *Shak.*

—Yet to *nouriſh* and advance the early virtue of young perſons was his more choſen deſire. *Fell.*—Gorgias hired ſoldiers, and *nouriſhed* war continually with the Jews. 2. *Mac.* x. 14. 4. To train, or educate.—Thou ſhalt be a good miniſter of Jeſus Chriſt, *nouriſhed* up in the words of faith. 1. *Tim.* iv. 6.—I travel not, neither do I *nouriſh* up young men, nor bring up virgins. *Iſaiah.* xxiii. 4. 5. To promote growth or ſtrength, as food.—In vegetables there is one part more nouriſhing than another; as grains and roots *nouriſh* more than their leaves. *Bacon.*

(2.) * *To* NOURISH. *v. n.* To gain nouriſhment. Unuſual.—Fruit trees grow full of moſs, which is cauſed partly by the coldneſs of the ground, whereby the parts *nouriſh* leſs. *Bacon.*

* NOURISHABLE. *adj.* [from *nouriſh.*] Suſceptive of nouriſhment.—The chyle is mixed herewith, partly for its more ready adheſion to all the *nouriſhable* parts. *Grew.*

* NOURISHER. *n. ſ.* [from *nouriſh.*] The perſon or thing that nouriſhes.—

Sleep, chief *nouriſher* in life's feaſt. *Shak.*

—A reſtorer of thy life, and a *nouriſher* of thine old age. *Ruth.*—Milk warm from the cow is a great *nouriſher*. *Bacon.*—Bran and ſwine's dung laid up together to rot, is a very great *nouriſher* and comforter to a fruit tree. *Bacon.*—

Pleaſe to taſte
Theſe bounties which our *nouriſher* hath caus'd
The earth to yield. *Milton.*

(1.) * NOURISHMENT. *n. ſ.* [*nouriſſment*, French.] That which is given or received, in order to the ſupport or increaſe of growth or ſtrength; food; ſuſtenance; nutriment.—When the *nouriſhment* grows unfit to be aſſimilated, or the central heat grows too feeble to aſſimilate it, the motion ends in confuſion, putrefaction, and death. *Newton.* 2. Nutrition; ſupport of ſtrength.

By temperance taught,
In what thou eat'ſt and drink'ſt; ſeeking from thence
Due *nouriſhment*, no gluttonous delight. *Milt.*

—The limbs are exhauſted by what is called an atrophy, and grow lean and thin by a defect of *nouriſhment*, occaſioned by an inordinate ſcorbutic or erratic heat. *Blackmore.* 3. Suſtentation; ſupply of things needful.—He inſtructed them, that as in the one place they uſe to refreſh their bodies, ſo they may in the other learn to ſeek the *nouriſhment* of their ſouls. *Hooker.*

(2.) NOURISHMENT. See NUTRITION.

(3.) NOURISHMENT OF VEGETABLES. See COMPOST, PLANTS, and RURAL OECONOMY.

* NOURITURE. *n. ſ.* [*nourriture*, French: this was afterwards contracted to *nurture*.] Education: inſtitution.—

Thither the great magician Merlin came,
As was his uſe oftimes to viſit me;
For he had charge my diſcipline to frame,
And tutor's *nouriture* to overſee. *Spenſer.*

* NOURSLING. *n. ſ.* The creature nurſed; nurſling. *Spenſer.*

(1.) * *To* NOUSEL. *v. a.* [The ſame I believe with *nuzzle*, and both in their original import, corrupted from *nurſle*.] To nurſe up.—Bald friars and knaviſh ſhavelings ſought to *nouſel* the common people in ignorance. *Spenſer.*

(2.) * *To* NOUSEL. *v. a.* [*nuzzle*, *noozle*, *nooſe*, or *noſel*; from *noſe*.] To entrap; to enſnare; as in a nooſe or trap. They *nuzzle* hogs to prevent their digging, that is, put a ring in their noſes.

NOUS-SHEHR, a town of Turkey, in Caramania, 40 miles SE. of Kir-Shehir.

NOUTRA, a town of Poland, in Cracow.

NOUVELLE EGLISE, [Fr. *i. e.* New Church.] a town of France, in the dep. of the Straits of Calais; 4½ miles E. of Calais.

NOUVION, a town of France, in the dep. of Aiſne; 13½ miles NW. of Vervins.

(1.) * NOW. *adv.* [*nu*, Sax. *nun*, Germ.] 1. At this time; at the time preſent.—Thy ſervants trade hath been about cattle, from our youth, even until *now*. *Gen.* xlvi. 34.—This will approve itſelf to be wiſdom at laſt, whatever the world judge of it *now*. *Tillotſon.*—Now that languages abound with words ſtanding for ſuch combinations, an uſual way of getting theſe complex ideas, is by the explication of thoſe terms that ſtand for them. *Locke.*—A patient of mine is *now* living, in an advanced age, that thirty years ago did, at ſeveral times, caſt up from the lungs a large quantity of blood. *Blackmore.* 2. A little while ago; almoſt at the preſent time.—

Now the blood of twenty thouſand men
Did triumph in my face, and they are fled. *Shak.*

They, that but *now* for honour and for plate,
Made the ſea bluſh with blood, reſign their hate.
Waller.

3. At one time; at another time.—

Now high, *now* low, *now* maſter up, *now* miſs. *Pope.*

4. It is ſometimes a particle of connection, like the French *or* and Latin *autem*: as, If this be true, he is guilty; *now* this is true, therefore he is guilty.—*Now* whatſoever he did or ſuffered, the

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end thereof was to open the doors of the kingdom of heaven. *Hooker.*—*Now* to affect the malice of the people, is as bad as that which he diſlikes, to flatter them. *Shak.*—Not this man but Barabbas; *now* Barabbas was a robber. *St John.*—Every one deſires another ſhould love him. *Now* it is a maxim of Nature, that one do to others, according as he would himſelf be done to. *White.*—Pheaſants which are granivorous birds, the young live moſtly upon ants eggs. *Now* birds being of a hot nature, are very voracious. *Ray.*—The other great and undoing miſchief, which befalls men, is by their being miſrepreſented. *Now* by calling evil good, a man is miſrepreſented to others. *South.*—The firſt day of the full moon of the month Tizpa was near at hand. *Now* it is a received tradition among the Perſians, that the ſouls of the royal family who are in a ſtate of bliſs, do, on the firſt full moon after their deceaſe, paſs through the eaſtern gate of the black palace. *Addiſon.*—

The praiſe of doing well
Is to the ear as ointment to the ſmell.
Now if ſome flies, perchance, however ſmall,
Into the alabaſter urn ſhould fall,
The odours die. *Prior.*

—The only motives that can be imagined of obedience to laws, are either the value and certainty of rewards, or an apprehenſion of juſtice and ſeverity. *Now* neither of theſe, excluſive of the other, is the true principle of our obedience to God. *Rogers.*—There will be always ſomething lighter beneath, and ſomething heavier above. *Now* what can make the heavier particles of bone aſcend above the lighter ones of fleſh, or depreſs theſe below thoſe, againſt the tendency of nature? *Bentley.* 5. After this; ſince things are ſo, in familiar ſpeech.—How ſhall any man diſtinguiſh *now* betwixt a paraſite and a man of honour, where hypocriſy and intereſt look ſo like duty and affection? *L'Eſtrange.* 6. *Now and then*; at one time and another, uncertainly. This word means, with regard to time, what is meant by *here and there* with reſpect to place.—*Now and then* they ground themſelves on human authority, even when they moſt pretend divine. *Hooker.*—*Now and then* ſomething of extraordinary, that is any thing of your production, is requiſite to refreſh your character. *Dryden.*—A moſt effectual argument againſt ſpontaneous generation is, that there is no new ſpecies produced, which would *now and then* happen, were there any ſuch thing. *Ray.*—He who reſolves to walk by the goſpel-rule of forbearing all revenge, will have opportunities every *now and then* to exerciſe his forgiving temper. *Atterbury.*—They *now and then* appear in the offices of religion, and avoid ſome ſcandalous enormities. *Rogers.* 7. *Now and then* are applied to places conſidered as they riſe to notice in ſucceſſion.—A mead here, there a heath, and *now and then* a wood. *Drayton.*

(2.) * Now. *n. ſ.* Preſent moment. A poetical uſe.—

Nothing is there to come, and nothing paſt,
But an eternal *now* does ever laſt. *Cowley.*
She vaniſh'd, we can ſcarcely ſay ſhe died,
For but a *now* did heav'n and earth divide.
Dryden.
Not leſs, er'n in this deſpicable *now*,
Than when my name fill'd Afric with affrights.
Dryden.

(3.) Now, in geography, a river of Derbyſhire, which runs into the Derwent, 9 miles N. of Bakewell.

* NOWADAYS *adv.* [This word, though common, and uſed by the beſt writers, is perhaps barbarous.] In the preſent age.—

It's *nowadays*, ne half ſo ſtrait and ſore. *Spenſ.*—Reaſon and love keep little company together *nowadays*. *Shak. Midſ. Night Dream.*—It was a veſtal and a virgin fire, and differed as much from that which paſſes by this name *nowadays*, as the vital heat from the burning of a fever. *South.*—Such are thoſe principles, which, by reaſon of the bold cavils of perverſe and unreaſonable men, we are *nowadays* put to defend. *Tillotſon.*

What men of ſpirit *nowadays*
Come to give ſober judgment of new plays?
Garrick.

NOWAG, a town of Silefia, 4½ m. NW. Neiſſe.

NOWECZEITLY, a town of Poland, in Lemberg: 18 miles E. of Lemberg.

NOWECZELKO, a town of Poland, in Podolia; 64 miles NW. of Hamniecz.

(1.) * NOWED. *adj.* [*noué*, Fr.] Knotted; inwreathed.—Reuben is conceived to bear three barres waved, Judah a lion rampant, Dan a ſerpent *nowed*. *Brown.*

(2.) Nowed, in heraldry, is derived from the Latin *nodatus*, and applied to the tails of ſuch creatures as are very long, and repreſented in coat-armour as tied up in a knot.

NOWEL, Alexander, dean of St Paul's in the reign of Q. Elizabeth. He wrote two Catechiſms, one of them in Latin, Greek, and Hebrew. He died in 1602.

NOWELZACLO, a town of Poland, in Red Ruſſia; 44 miles SSE. of Halicz.

* NOWES. *n. ſ.* [from *nou*, old French.] The marriage knot. Out of uſe.—

Thouſands of crown'd ſouls throng to be
Themſelves thy crown, ſons of thy *nowes*.
Craſhaw.

* NOWHERE. *adv.* [*no* and *where*.] Not in any place.—Some men, of whom we think very reverently, have in their books and writings *nowhere* mentioned or taught that ſuch things ſhould be in the church. *Hooker.*—True pleaſure and perfect freedom are *nowhere* to be found, but in the practice of virtue. *Tillotſon.*

NOWIDWOR, a town of Lithuania, in Novogrodeck, 68 miles SW. of Novogrodeck.

* NOWISE. *adv.* [*no* and *wiſe*: This is commonly ſpoken and written by ignorant barbarians, *noways*.] Not in any manner or degree.—A power of natural gravitation, without contact or impulſe, can in *nowiſe* be attributed to mere matter. *Bentley.*

NOWOGROD, a town of Poland, in Braclaw.

NOWYTARG, a town of Poland, in Cracow.

NOX, Night, in the Pagan mythology, one of the moſt ancient deities among the heathens, daughter of Chaos. From her union with her brother Erebus, ſhe gave birth to the Day and the Light. She was alſo the mother of the Parcæ, Heſperides, Dreams, Diſcord, Death, Momus, Fraud, &c. She is called by ſome of the poets the mother of all things, of gods as well as of men;

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men; and she was worshipped with great solemnity by the ancients. She had a famous statue in Diana's temple at Ephesus. It was usual to offer her a black sheep, as she was the mother of the Furies. The cock was also offered to her, as that bird proclaims the approach of day during the darkness of the night. She is represented as mounted on a chariot, and covered with a veil bespangled with stars. The constellations generally went before her as her constant messengers. Sometimes she is seen holding two children under her arms; one of whom is black, representing Death; and the other white, representing Sleep. Some moderns describe her as a woman veiled in mourning, crowned with poppies, and carried in a chariot drawn by owls and bats.

NOXAM, } NOXONTON, or NOXTOWN, a town
NOXAN, } of Delaware, in Newcastle county; 21 miles N. of Dover, 22 SSW. of Wilmington, and 50 SW. of Philadelphia.

* NOXIUS. *adj.* [*noxius*, Lat.] 1. Hurtful; harmful; baneful; mischievous; destructive; pernicious; unwholesome.—Preparation is not only by addition of other bodies, but separation of *noxious* parts from their own. *Brown's Vulg. Err.*

Kill *noxious* creatures, where 'tis sin to save. *Dryden.*

Arise, the pines a *noxious* shade diffuse. *Pope.*—*Noxious* seeds of the disease are contained in a smaller quantity in the blood. *Blackm.* 2. Guilty; criminal.—Those, who are *noxious* in the eye of the law, are justly punished. *Bramhall against Hobbes.* 3. Unfavourable; unkindly.—Too frequent an appearance in places of much resort, is *noxious* to spiritual promotions. *Swift's Miscel.*

* NOXIOUSLY. *adv.* [from *noxious*.] Hurtfully; perniciously.

* NOXIOUSNESS. *n. s.* [from *noxious*.] Hurtfulness; insalubrity.—The writers of politics have warned us of the *noxiousness* of this doctrine to all civil governments. *Hammond.*

NOXONTON. See NOXAM.

NOY, William, attorney general under Charles I. was the son of William Noy of St Burian, gent. In 1593, he was sent to Exeter college, thence to Lincoln's Inn, where he became eminent in juridical knowledge. He was twice elected M P. for Helston, and in both parliaments zealously opposed king James's attempts to stretch the royal prerogative. In 1625, he was elected M. P. for St Ives, and in that and the following parliament continued to shine as a popular patriot; but in 1631, the court converted him by appointing him attorney-general; after which he pled for the extension of the royal prerogative as zealously as he had formerly opposed it. He was a man of abilities, and wrote several treatises; particularly, 1. The complete Lawyer; 2. Arguments of Law, and Speeches: 3. The Principal Grounds and Maxims of the Laws of England; 4to. He died at Tunbridge Wells, in Aug. 1634. whither he had gone for the benefit of the waters.

(1.) NOYA, an ancient town of Spain, in Galicia, on the mouth of the Tambro. Its chief trade is ship-building. It is 19 miles WSW. of Compostella. Lon. 7. 49. E. Teneriffe. Lat. 42. 49. N.

(2.) NOYA, a river of Spain, in Catalonia.

NOYAL, three towns of France; viz.

1. NOYAL MUZILLAC, in the dep. of the Morbihan, 6 miles NW. of Roche Bernard.

2. NOYAL PONTIVY, in the dep of Morbihan, 3 miles E. of Pontivy, and 5 W. of Rohan.

3. NOYAL SUR VILAINE, in the dep. of Ille and Vilaine, 6 m. E. of Rennes, and 12 W. of Vitré.

NOYEL, a river of Indostan, which rises in the mountains 10 miles W. of Coimbetore, and runs into the Cauvery, 10 miles NW. of Carroor.

NOYEN HOTUN, a town of Chinese Tartary; 560 miles ENE. of Peking.

NOYENT, a town of France, in the dep. of Sarte, 5 miles SW. of Mans, and 3 ENE of Sablé.

NOYERS, three towns of France; viz. 1. In the dep. of the Lower Alps; 4½ miles W. of Sisteron; 2. in that of the Meuse, 9 miles NW. of Bar Le Duc, and 13 E. of Clermont; 3. in that of Yonne, on the Serin, in a valley surrounded with mountains, abounding with vineyards, 10½ miles S. of Tonnere, and 18 ESE. of Auxerre. Lon. 4. 2. E. Lat. 47. 39. N.

NOYON, a city of France, in the dep. of the Oise, situated on the declivity of a hill of an easy ascent, on the rivulet Vorse, which within a mile falls into the Oyse. It is an ancient place, being the NOVIODUNUM *Belgarum* of the Latins. It is pretty large, and is well situated for inland trade, which consists chiefly in wheat and oats sent to Paris. They have also manufactories of linen cloths, lawns, and tanned leather. The principal buildings are the episcopal palace, and the townhouse, which is regularly built in a large square, in the middle of which there is a fountain. It has several market-places, and two public gardens. Noyon is remarkable for being the birthplace of the famous John Calvin. See CALVIN.) It lies 22 miles NW. of Soissons, and 66 NNE. of Paris. Lon. 3. 6. E. Lat. 49. 35. N.

NOZAY, a town of France, in the dep. of the Lower Loire, and distr. of Blain; 9 m. NNE. Blain.

NOZDRICE, a town of Poland, in Volhynia.

NOZERET, or } a town of France, in the dep.
NOZEROY, } of Jura, and district of Arbois; 12 miles SE. of Salines, and 27 S. of Besançon, according to Mr Cruttwell; but Dr Brookes and J. Walker make it 20 miles SE. of Salines, and 30 S. of Besançon. Lon. 6. 13. E. Lat. 46. 47. N.

* NOZLE. *n. s.* [from *nose*.] The nose; the snout; the end.—It is nothing but a paltry old sconce, with the *nozle* broke off. *Mart. Scrib.*

NOZLI, a town of Turkey, in Natolia.

NOZZA, an ancient town of Italy, in the dep. of the Mincio, and district, late duchy, of Verona, seated in the vale of Sabbia.

NUABIA. See NUBIA, N° 2.

NUAYHAS, the AGUE TREE; a name given by the Indians to a sort of bamboo cane, the leaves of which, falling into the water, are said to impregnate it with such virtue, that the bathing in it afterwards cures the ague. They use also a decoction of the leaves to dissolve coagulated blood, giving it internally, and at the same time rubbing the bruised part externally with it. This plant flowers only once in its life; it lives 60 years before the flowers appear, but withers away in about a month afterwards, as soon as it has ripened the seed. There seems to be some fiction in

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the account of many other particulars relating to this tree in the *Hortus Malabaricus*: but it is certain, that the length of the stalks and trunk must be very great; for, in the gallery of Leyden, there is preserved a cane of it 28 feet long; and another, not much shorter, in the Ashmolean museum at Oxford, which is more than 8 inches diameter: yet both these appear to be only parts of the trunk, they being nearly as large at one end as at the other.

NUBA, a race of black Pagans, in the neighbourhood of Sennaar. Mr Bruce passed a day or two among them, in his way from Abyssinia; and he tells us, that they are all soldiers of the *Mek* or king of Sennaar, cantoned in villages, which to the distance of 4 or 5 miles surround the capital. They are not the aborigines of that part of Africa; but "are either purchased or taken from Fazuclo, and the provinces to the S. upon the mountains Dyre and Tegle." Though the slaves of a cruel and treacherous master, Mr Bruce represents them as a gentle, honest, and hospitable people; and he says, that on a journey he had seldom passed a more comfortable night, than one in which he took refuge from a storm in a village of these Nuba. He had a good supper, and a clean mat but to sleep in, while some of the Nuba watched for him all night, and took care of his beast and his baggage. "Having settlements and provisions given them by the government of Sennaar, as also arms put into their hands, they never wish to desert, but live a very domestic and sober life, and are a much gentler sort of negroes than their masters." (See SENNAAR.) Though the established religion of Sennaar is that of Mahomet, the government has never attempted to convert the Nuba. On the contrary, a certain number of Pagan priests is maintained for them in every village, who have soldiers in pay to assist them in the affairs of their religion. This is a very singular instance of toleration among Mahometans, and what we should little have expected from such barbarous and sanguinary wretches as those who have the supreme power in Sennaar. The idolatry of the Nuba is described as a mixture of Sabiism and idol worship: but it is singular, that their worship is chiefly paid to the moon, while they pay no attention to the sun rising or setting, advancing to the meridian or receding from it. They worship likewise a tree and a stone; but our author could never discover what tree or stone; only he learned that neither of them exists in Sennaar, but in the country where the Nuba are born. Such of them as are natives of the villages where he saw them, become, like their masters, nominal Mahometans.—The rest practise the idolatrous worship of their ancestors, and are much under the influence of their priests, from fear rather than from affection. They are immoderately fond of swine's flesh, and maintain great herds of small hogs, marked with black and white spots. Few of the Nuba advance higher than to be soldiers and officers in their own corps; and the King maintains about 12,000 of them near Sennaar to keep the Arabs in subjection. In a climate so hot as that which they inhabit, there is very little need of fuel; and it is happy for them that such is the case, for in the whole country there is not a single tree, nor turf, nor any thing resembling it. They do not, however, "eat their meat raw like the Abyssinians; but with the stalk of the dora or millet, and the dung of camels, they make ovens under ground, in which they roast their hogs whole, in a very cleanly manner, keeping the skins on till they are perfectly baked."

* *To* NUBBLE. *v. a.* [properly to *knubble*, or *knobble*, from *knob*, for a clenched fist.] To bruise with hand-cuffs, *Minsheu*.

(1.) NUBECULA, [Lat.] *n. s.* a LITTLE CLOUD, in medicine, a term sometimes used for a disease in the eye, wherein objects appear as through a cloud or mist. The nubecula seems to arise from certain gross particles detained in the pores of the cornea, or swimming in the aqueous humour, and thus intercepting the rays of light.

(2.) NUBECULA is used likewise for a matter in form of a cloud, suspended in the middle of the urine.

(3.) NUBECULA, or } is also used for what we
NUBES, *a cloud*, } otherwise call *albugo*. See ALBUGO.

NUBEY, a town of Yorkshire, SW. of Gisborn.

(1.) NUBIA, a kingdom of Africa, bounded on the N. by Egypt, on the W. by the Red Sea and part of Abyssinia on the E. by the kingdoms of Tagua, Gauga, and the desert of Gerham. The Nile runs through it, on the banks of which, and those of the other rivers, it is pretty fruitful, but in other places barren, sandy, and in want of water. To the west of the Nile is the desert of Bahouda, which is five days journey over, being the usual road from Egypt to Abyssinia. Money is of no use in this country in the way of trade, it being all carried on by way of exchange. Their bread and drink is made of a small round seed, called *doca* or *seff*, which is very ill tasted. Their houses have mud walls, being very low, and covered with reeds. The habit of the better sort is a vest without sleeves; and they have no coverings for their heads, legs, and feet. The common people wrap a piece of linen cloth about them, and the children go quite naked. They are a stupid debauched sort of people, having neither modesty, civility, nor religion, though they profess to be Mahometans. The productions of this country are gold, elephants teeth, civet, and sandal wood; and they send a great number of slaves into Egypt. The principal towns known to the Europeans are Dangola and SENNAAR. Nubia is famous for a race of horses the most powerful and docile in the world. These animals are generally about 16 hands high; and Mr Bruce, who has given the best and most scientific account of them, says the breed was introduced into Nubia at the Saracen conquest, and has been preserved unmixed to this day. He represents them as a much nobler animal than the Arabian horse. The Nubians are very jealous in keeping up the pedigree. They are black or white, but a vast proportion of the former to the latter."

(2.) NUBIA, or NUABIA, a town of Africa, in the above kingdom, on the Nile; supposed to be the ancient MEROE; 300 miles NE. of Sennaar, and 380 S. of Syene. Lon. 32. 40. E. of Ferro. Lat. 18. 10. N.

NUBIAN

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NUBIAN DESERT, a vast tract of barren rocks and burning sands, extending from Syene in Upper Egypt to Gedin, the capital of Berber in Nubia. As Syene is in lat. 24° 5′ 45″ N. and Gedin in lat. 17° 57′ 22″, the length of this desart from N. to S. is 6° 8′ 23″, or upwards of 420 English miles. Its breadth from E. to W. has not been precisely ascertained. Through this horrid region, where nothing is to be seen which has the breath of life, must all travellers pass from Sennaar to Egypt; in danger every moment of perishing by thirst, being overwhelmed by moving columns of sand, suffocated by a hot and poisonous wind, or cut in pieces by troops of wandering Arabs.

NUBIANS, the people of Nubia. See NUBIA.

* NUBIFEROUS. *adj.* [*nubifer*, Lat.] Bringing clouds. *Dict.*

* *To* NUBILATE. *v. a.* [*nubilo*, Lat.] To cloud. *Dict.*

* NUBILE. *adj.* [*nubilis*, Fr. *nubilis*, Lat.] Marriageable; fit for marriage.—

The cowslip-smiles, is brighter yellow crest,
Than that which veils the *nubile* virgin's breast.
Prior.

NUBLADA, an island in the Pacific Ocean, W. by S. of Cape Coriepatee, on the coast of Mexico, and E. of Rooo Postida. Lon. 122. 30. W. Lat. 16. 40. N.

NUBY, a town of Yorkshire, SE. of Ingleton.

NUCASSE, a town of the United States, in Tennessee, 45 miles S. of Knoxville.

NUCERIA, an ancient town of Italy in Campania, which was taken by Hannibal. It became a Roman colony under Augustus. It is now called *Nocera*. See NOCERA, N° 2.

NUCESTOWN, a town of Ireland, in Cork.

NUCHAN, a town of Russia, on the coast of that part of the sea of KAMTSCHATKA which separates the continents of Asia and America. Lon. 207° E. of Ferro. Lat. 60° N.

NUCHVUNK, a district on the coast of New Britain, frequented by sea horses. Lat. 60. 0. N.

NUCI, a town of Naples, in Bari.

(1.) * NUCIFEROUS. *adj.* [*nuces* and *fero*, Lat.] Nutbearing. *Dict.*

NUCK, Anthony, an eminent Dutch physician, who was professor of Anatomy at Leyden. His chief works are, Adenographia, Sedlographia, et operationes et experimenta Chirurgica, 3 vols. 1722.

(1.) * NUCLEUS. *n. s.* [Lat.] A kernel; any thing about which matter is gathered or conglobated.—The crusts are each in all parts nearly of of the same thickness, their figure suited to the *nucleus*, and the outer surface of stone exactly of the same form with that of the *nucleus*. *Woodw.*

(2.) NUCLEUS, in general, denotes any seed enclosed within a husk. It is also used for the body of a comet, otherwise called its *head*.

NUCTA, a dew, which falling in Egypt, about St John's day, is by the superstitious natives considered as miraculous, and the peculiar gift of that saint. It is occasioned by the rains which at this period fall in Ethiopia. The Nile at this season is almost stagnant, and in many of its cisterns putrid, but when it is augmented by these showers the sun resumes its suspended power of disengaging this light vapour, which never fails to put an immediate stop to the plague, that is but too frequently raging. So powerfully is it endued with this beneficial quality, that immediately after St John's day, the clothes of the many thousands who have died during the plague are publicly exposed in the market place; and, after imbibing the dew, are handled, bought, put on and worn, without any apprehension of danger, and without a single accident.

* NUDATION. *n. s.* [*nudation*, Fr. *nudo*, Lat.] The act of making bare or naked.

(1.) * NUDITY. *n. s.* [*nudité*, Fr. *nudus*, Lat.] Naked parts.—There are no such licences permitted in poetry any more than in painting, to design and colour obscene *nudities*. *Dryden.*

(2.) NUDITY, in painting and sculpture, is applied to any part of a human figure, not covered with any drapery; or those parts where the carnation appears.

NUEA-KIANG, a town of China, in Se-tchuen.

* NUES. See NEWES.

NUESTRA-SENORA or SENORA, [Spanish, *i. e.* Our Lady.] A name given by the Spaniards to 4 towns, and 2 islands, viz.

1. NUESTRA SENORA DE BUENOS AYRES. See BUENOS AYRES, N° 2.

2. NUESTRA SENORA DE LA PAZ, a town of Peru, in the audience of Charcas, in a valley abounding with vines and fruits. Lon. 64. 0. W. Lat. 17. 20. S.

3. NUESTRA SENORA DE LA VITTORIA, a town of MEXICO, in the prov. of Tabasco, on the bay of Campeachy; so named by Cortes after he had taken and plundered it in 1519. Lon. 92. 35. W. Lat. 18. 0. N.

4. NUESTRA SENORA DEL SOCORO, an island in the S. Pacific Ocean, near the coast of Chili. Lat. 45. 0. S.

5. NUESTRA SENORA DE LUZ, an island in the S. Pacific Ocean, discovered by Quiros, in 1506. Lon. 188. 0. from Ferro. Lat. 14. 30. S.

6. NUESTRA SENORA DE TALAVERA, a town of Paraguay, in Tucuman.

NUEVA SEGOVIA, a town in the isle of Manilla or Luzon, with a bishop's see; the residence of the Portuguese alcayde, major of the province. It is seated near the mouth of the Cagayan. Lon. 120. 50. E. Lat. 18. 30. N.

NUEVE SUR BARANJON, a town of France, in the dep. of Cher, 15 miles N. of Bourges.

NUEVO BANCO, a bank, called by the British *the New Bear*, about 32 leagues S. of the W. end of Jamaica, with a quay, stretching E. by N. and W. by S. Lat. 15. 57. N.

NUEZ, a town of Spain, in Leon.

* NUGACITY. *n. s.* [*nugax*, Latin.] Futility; trifling talk or behaviour.

* NUGATION. *n. s.* [*nugor*, Latin.] The act or practice of trifling.—The opinion, that putrefaction is caused either by cold, or peregrine and preternatural heat, is but *nugation*. *Bacon.*

* NUGATORY. [*nugatorius*, Latin.] Trifling; futile; insignificant.—Some great men of the last age, before the mechanical age was revived, were too much addicted to this *nugatory* art. *Bentley.*

NUGHZ, or NAGAZ, a town of Candahar, on the N. bank of the Cowmull; 58 miles ESE. of Ghizni, and 85 SE. of Cabul. Lon. 69. 31. Lat. 33. 16. N.

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NUI-HANG, a town of China, in Ho-nan.

(1.) NUILLE-EN-VANDIN, a town of France, in the dep. of Maine; 15 miles NE. of Maine.

(2.) NUILLE SUR VICOIN, a town of France, in the dep. of Maine; 6 miles S. of Laval, and 9 N. of Chateau Gontier.

NUIS, or NUIS-SUR-ARMANCE, a town of France, in the dep. of Yonne; 12 miles SE. of Tonnere, and 27 E. of Auxerre.

(1.) * NUISANCE. *n. f.* [*nuisance*, Fr.] 1. Something noxious or offensive.—This is the liar's lot, he is accounted a pest and a *nuisance*. *South.*—A wise man who does not assist with his counsels, a rich man with his charity, and a poor man with his labour, are perfect *nuisances* in a commonwealth. *Swift.* 2. [In law.] Something that incommodes the neighbourhood.—*Nuisances*, as necessary to be swept away as dirt out of the streets. *Kettlewell.*

(2.) NUISANCE, in law, § 1. *def.* 2. Nuisances are either public or private. A public nuisance is an offence, against the public in general, either by doing what tends to the annoyance of all the king's subjects, or by neglecting to do what the common good requires: in which case all annoyances and injuries to streets, highways, bridges and large rivers, as also disorderly alehouses, bawdy-houses, gaming-houses, stages for rope-dancers, &c. are held to be common nuisances. A private nuisance is, when only one person or family is annoyed by the doing of any thing; as where a person stops up the light of another's house, or builds in such a manner that the rain falls from his house upon his neighbour's.

NUITHONES, an ancient people of Germany, who inhabited the countries now called MECKLENBURG and POMERANIA.

NUITZ. See NUYS.

NUIZIA, a river of Russia which runs into the Olekma.

NUK, a lake of Russia, in Olonetz; 40 miles long and 8 broad.

NUKE, a small town in Northumberland.

NULES, a town of Spain, in Valencia.

(1.) * NULL. *adj.* [*nullus*, Latin.] Void; of no force; ineffectual.—

Tho' the law makes *null* th' adult'rous deed
Of lands to her, the cuckold may succeed. *Dryd.*

—Their orders are accounted to be *null* and invalid by many. *Lesley.*—The pope's confirmation of the church-lands to those who hold them by king Henry's donation, was *null* and fraudulent. *Swift.*

(2.) * NULL. *n. f.* Something of no power, or no meaning. Marks in ciphered writing which stand for nothing, and are inserted only to puzzle, are called *nulls*.—If part of the people be somewhat in the election, you cannot make them *nulls* or ciphers in the privation or translation. *Bacon.*

* *To* NULL. *v. a.* [*nullus*, Latin.] To annul; to annihilate; to deprive of efficacy or existence.

Thy fair enchanted cup and warbling charms
No more on me have power; their force is *null'd*. *Milton.*

—Reason hath the power of *nulling* or governing all other operations of bodies. *Grew.*

* NULLIBIETY. *n. f.* [from *nullibi*, Latin.] The state of being nowhere.

* *To* NULLIFY. *v. a.* [from *nullus*, Lat.] To annul; to make void.

(1.) * NULLITY. *n. f.* [*nullité*, Fr.] 1. Want of force or efficacy.—It can be no part of my business to overthrow this distinction, and to shew the *nullity* of it. *South.*—The jurisdiction is opened by the party, in default of justice from the ordinary, as by appeals or *nullities*. *Ayliffe.* 2. Want of existence.—A hard body struck against another hard body, will yield an exteriour sound, in so much as if the percussion be over soft, it may induce a *nullity* of sound, but never an interiour sound. *Bacon.*

(2.) NULLITY, in law, signifies any thing that is null or void: thus there is a nullity of marriage, where persons marry within the degrees, or where infants marry without consent of their parents or guardians.

(1.) NUMA, MARCIUS, the son-in-law of NUMA POMPILIUS, and father of king ANCUS, was made governor of Rome by Tullus Hostilius.

(2.) NUMA POMPILIUS, the 2d king of Rome, and the 4th son of Pompilius Pompo, an illustrious Sabine. He had married Tatia, the daughter of king Tatius, and together with her remained in his native country, preferring the tranquillity of a private life to the splendor of a court. Upon the death of his wife, with whom he had lived 13 years, he gave himself up entirely to the study of wisdom; and leaving the city of Cures, confined himself to the country, in search only of those woods and fountains which religion had made sacred. His recluse life gave rise to the fable, which was very early received among the Sabines, that Numa lived in familiarity with the nymph Egeria. (See EGERIA.) Upon the death of Romulus, the senate and people of Rome dispatched Julius Proculus and Valerius Volesus, two senators of distinction, to make him an offer of the kingdom. The Sabine philosopher rejected at first their proposal; but at last yielded, and set out for Rome, where he was received by all ranks of people with joy. Spurius Vettius, the interrex for the day, having assembled the curiæ, he was elected in due form, and the election was unanimously confirmed by the senate. The beginning of his reign was popular; and he dismissed the 300 guards which his predecessor had kept around his person. He was not, like Romulus fond of war, but applied himself to tame the ferocity of his subjects, to inculcate in their minds a reverence for the Deity, and to quell their dissensions by dividing all the citizens into classes. He established different orders of priests, and taught the Romans not to worship the Deity by images; and hence none appeared in the temples of Rome, for 160 years. He encouraged the report of his paying visits to the nymph Egeria, to give sanction to the laws which he introduced. He established the college of the vestals, and told the Romans that the safety of the empire depended upon the preservation of the sacred *ancyle* or shield, which, it was believed, had dropped from heaven. He dedicated a temple to Janus, which, during his whole reign, remained shut as a mark of peace. After a reign of 42 years, in which he had given every encouragement to the useful arts, Numa died A. U. C. 82.

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81. Not only the Romans, but the neighbouring nations, were eager to pay their laſt offices to a monarch whom they revered. He left behind him one daughter called Pompilia, who married NUMA MARCIUS, and became the mother of Ancus Marcius the 4th king of Rome. The principal laws of king Numa, mentioned by authors, are; 1. That the gods ſhould be worſhipped. 2. That whoever knowingly killed a free man ſhould be held as a parricide. 3. That no harlot ſhould touch the altar of Juno; and if ſhe did, that ſhe ſhould ſacrifice an ewe-lamb to that goddeſs, with diſhevelled hair. 4. That whoever removed a land-mark ſhould be put to death. 5. That wine ſhould not be poured on a funeral pile, &c.

NUMAGA, a river of Germany in Auſtrian Suabia, which runs into the Rhine, 6 miles above Briſach.

NUMAGEN, an ancient town of Germany in the ci-devant electorate of Treves, formerly called *Neomagus*, (See NEOMAGUS, N° 2.) now annexed to the French empire, and included in the dep. of the Rhine and Moſelle; 14 miles E. of Treves.

NUMANA, an ancient town of Italy, in Picenum. *Mela*, ii. 4.

NUMANATES, the people of Numana.

NUMANTIA, a very noble city, the ornament of Hiſpania Citerior, (*Florus*;) celebrated for the long war of 20 years which it maintained againſt the Romans. Numantia was taken by the Romans, A. U. C. 619, after a ſiege, productive of hardſhips to the inhabitants unparalleled in hiſtory. See ROME.

NUMANTINES, the brave people of Numantia.

* NUMB. *adj.* [*benumen*, *benumed*, Saxon.] 1. Torpid; deprived in a great meaſure of the power of motion and ſenſation; chill; motionleſs.—

Like a ſtony ſtatue, cold, and *numb*. * *Shak.*

—Leaning long upon any part maketh it *numb* and aſleep. *Bacon.* 2. Producing chillneſs; benumbing.—

When we both lay in the field,
Frozen almoſt to death, how he did lap me
Ev'n in his garments, and did give himſelf
All thin and naked to the *numb* cold night. *Shak.*

* *To* NUMB. *v. a.* To make torpid; to make dull of motion or ſenſation; to deaden; to ſtupify.—

Bedlam beggars, with roaring voices,
Strike in their *numb'd* and mortify'd bare arms,
Pins, wooden pricks, nails, ſprigs of roſemary;
And with this horrible object, from low farms,
Inforce their charity. *Shak.*

She can unlock
The claſping charm, and thaw the *numbing* ſpell. *Milton.*

Lazy winter *numbs* the lab'ring hand. *Dryd.*

When the quick ſpirits their warm march forbear.
And *numbing* coldneſs has embrac'd the ear. *Prior.*

* NUMBEDNESS. *n. ſ.* [from *numbed*.] Torpor; interruption of ſenſation.—If the nerve be quite divided, the pain is little, only a kind of ſtupor or *numbedneſs*. *Wiſeman.*

* *To* NUMBER. *v. a.* [*nombrer*, Fr. *numero*, Lat.] 1. To count; to tell; to reckon how many.—If a man can *number* the duſt of the earth, then ſhall thy ſeed alſo be *numbered*. *Gen.* xiii. 10. —I will *number* you to the ſword. *Iſ.* lxv. 12.—

The gold, the veſt, the tripods *number'd* o'er,
All theſe he found. *Pope.*

2. To reckon as one of the ſame kind.—He was *numbered* with the tranſgreſſors. *Iſ.* liii. 12.

(I.) * NUMBER. *n. ſ.* [*nombre*, French; *numerus*, Latin.] 1. The ſpecies of quantity by which it is computed how many.—

Hye thee from this ſlaughter-houſe,
Leſt thou increaſe the *number* of the dead. *Shak.*

—The ſilver, the gold, and the veſſels were weighed by *number* and by weight. *Ezra* viii. 34. —There is but one gate for ſtrangers to enter at, that it may be known what *numbers* of them are in the town. *Addiſon.* 2. Any particular aggregate of units, as *even* or *odd*.—This is the third time; I hope good luck lies in odd *numbers*; they ſay there is divinity in odd *numbers*. *Shak.* 3. Many; more than one.—Much of what we are to ſpeak may ſeem to a *number* perhaps tedious, perhaps obſcure, dark, and intricate. *Hooker.*—Water lily hath a root in the ground; and ſo have a *number* of other herbs that grow in ponds. *Bacon.* —Ladies are always of great uſe to the party they eſpouſe, and never fail to win over *numbers*. *Addiſon.* 4. Multitude that may be counted.—Of him came nations and tribes out of *number*. 2 *Eſd.* iii. 7.—

Loud as from numbers without *number*. *Milton.*

5. Comparative multitude.—*Number* itſelf imporeth not much in armies, where the people are of weak courage. *Bacon.* 6. Aggregated multitude. —You may ſend for your ſick, and the reſt of your *number*, which ye will bring on land. *Bacon.* —Sir George Summers, ſent thither with nine ſhips and 500 men, loſt a great part of their *numbers* in the iſle of Bermudas. *Heylyn.* 7. Harmony; proportions calculated by *number*.—

They, as they move
Their ſtarry dance in *numbers* that compute
Days, months, and years, tow'rds his all-chearing lamp,
Turn ſwift. *Milton.*

8. Verſes; poetry.—

Then feed on thoughts that voluntary move
Harmonious *numbers*. *Milton.*

Yet ſhould the Muſes bid my *numbers* roll
Strong as their charms, and gentle as their ſoul. *Pope.*

9. [In grammar.]—In the noun is the variation or change of termination to ſignify a *number* more than one. *Clark.*

How many *numbers* are in nouns?—
—Two. *Shak.*

(II.) NUMBER, (§ 1. *def.* 1, 2.) See ARITHMETIC, *Index*, and METAPHYSICS, *Sect.* XIV. Number, ſays Malcolm, is either abſtract or applicate: Abſtract, when referred to things in general, without attending to their particular properties; and applicate, when conſidered as the number of a particular ſort of things, as yards, trees, or the like. When particular things are mentioned, there is always ſomething more conſidered than barely their numbers; ſo that what is true of numbers in the

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the abſtract, or when nothing but the number of things is conſidered, will not be true when the queſtion is limited to particular things: for inſtance, the number two is leſs than three; yet two yards is a greater quantity than three inches; becauſe regard muſt be had to their different natures as well as number, whenever things of a different ſpecies are conſidered; for though we can compare the number of ſuch things abſtractedly, yet we cannot compare them in any applicate ſenſe. And this difference is neceſſary to be conſidered, becauſe upon it the true ſenſe, and the poſſibility or impoſſibility, of ſome queſtions depend. Number is unlimited in reſpect of *increaſe*; becauſe we can never conceive a number ſo great but ſtill there is a greater. However, in reſpect of *decreaſe*, it is limited; unity being the firſt and leaſt number, below which therefore it cannot deſcend, except by ſubdiviſion into decimal or other parts, which may alſo be extended *infinitely*, at leaſt in *idea*, if not in *fact*; for we cannot conceive any particle of matter ſo ſmall, but that it may be ſuppoſed capable of being rendered ſtill ſmaller, by diviſion and ſubdiviſion; and this is proved not only by the aſtoniſhing divilibility of gold in gold leaf, gilding, &c. (ſee GOLD, N° 1, § 6, 13.) but alſo even in animated matter, by the incredible number of inviſible animalculæ diſcovered by the microſcope. See ANIMALCULE, § 1—16, and MICROSCOPICS, § 2.

(III.) NUMBER, GOLDEN. See CHRONOLOGY, *Index*.

(IV.) *The* NUMBER NINE has a very curious property, its products always compoſing either 9 or ſome leſſer product of it. (See NINE, N° 2.) Such ſpeculations are by ſome conſidered as trifling and uſeleſs; but perhaps they judge too haſtily; for few employments are more innocent, none more ingenious, nor, to thoſe who have a taſte for them, more amuſing: and mathematical amuſements ſometimes lead to important and uſeful diſcoveries.

(V.) NUMBERS, ANCIENT. Numbers were by the Jews, as well as the ancient Greeks and Romans, expreſſed by letters of the alphabet: hence we may conceive how imperfect and limited their arithmetic was, becauſe the letters could not be arranged in a ſeries, or in different columns, convenient for ready calculation. The invention of the arithmetical figures which we now make uſe of, and particularly the CYPHER, has given us a vaſt advantage over the ancients in this reſpect. (See ARITHMETIC, *Index*; and NUMERAL, § 3.) The Jewiſh cabbaliſts, the Grecian conjurors, and the Roman augurs, had a great veneration for particular numbers, and the reſult of particular combinations of them. Thus three, four, ſix, ſeven, nine, ten, were with them full of divine myſteries, and of great efficacy.

(VI.) NUMBERS, BOOK OF, the 4th book of the Pentateuch, taking its denomination from its containing the families of Iſrael. A great part of this book is hiſtorical, relating to ſeveral remarkable paſſages in the Iſraelites march through the wilderneſs. It contains a diſtinct relation of their ſeveral movements from one place to another, or their 42 ſtages through the wilderneſs, and many other things, whereby we are inſtructed and confirmed in ſome of the weighteſt truths that have immediate reference to God and his providence in the world. But the greateſt part of this book is ſpent in enumerating thoſe laws and ordinances, whether civil or ceremonial, which were given by God, but not mentioned before in the preceding books.

(VII.) NUMBERS, KINDS AND DISTINCTIONS OF. Mathematicians, conſidering number under a great variety of relations, have eſtabliſhed the following diſtinctions:

1. NUMBERS, BROKEN, are the ſame with fractions.

2. NUMBERS, CARDINAL, are thoſe which expreſs the quantity of units, as 1, 2, 3, 4, &c. whereas ordinal numbers are thoſe which expreſs order, 1ſt, 2d, 3d, &c.

3. NUMBERS, COMPOUND, thoſe diviſible by ſome other number beſides unity; as 12, which is diviſible by 2, 3, 4, and 6. Numbers, as 11 and 15, which have ſome common meaſure beſides unity, are ſaid to be compound numbers among themſelves.

4. NUMBERS, CUBIC, the product of ſquare numbers by their root: ſuch is 27, as being the product of the ſquare number 9 by its root 3. All cubic numbers whoſe root is leſs than 6, being divided by 6, the remainder is the root itſelf; thus 27+6 leaves the remainder 3, its root; 216, the cube of 6, being divided by 6, leaves no remainder; 343, the cube of 7, leaves a remainder 1, which, added to 6, is the cube root; and 512, the cube of 8, divided by 6, leaves a remainder 2, which, added to 6, is the cube root. Hence the remainders of the diviſions of the cubes above 216, divided by 6, being added to 6, always give the root of the cube ſo divided till that remainder be 5, and conſequently 11, the cube root of the number divided. But the cubic number above this being divided by 6, there remains nothing, the cube root being 12. Thus the remainders of the higher cubes are to be added to 12, and not to 6, till you come to 18, when the remainder of the diviſion muſt be added to 18; and ſo on *ad infinitum*.

5. NUMBERS, DETERMINATE, thoſe referred to ſome given unit, as a ternary or three.

6. NUMBERS, EVEN, thoſe which may be divided into two equal parts without any fraction, as 6, 12, &c. The ſum, difference, and product, of any number of even numbers, is always an even number.

7. NUMBERS, EVENLY EVEN, thoſe which may be meaſured, or divided, without any remainder, by another even number, as 4 by 2.

8. NUMBERS, HETEROGENEAL, thoſe referred to different units.

9. NUMBERS, HOMOGENEAL, are thoſe referred to the ſame unit.

10. NUMBERS, IMPERFECT, thoſe whoſe aliquot parts added together make either more or leſs than the whole. And theſe are diſtinguiſhed into abundant and defective: an inſtance in the former caſe is 12, whoſe aliquot parts 6, 4, 3, 2, 1, make 16; and in the latter caſe 16, whoſe aliquot parts 8, 4, 2, and 1, make but 15.

11. NUMBERS, INDETERMINATE, thoſe referred to unity in general, and called *quantity*.

12. NUMBERS,

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12. NUMBERS, IRRATIONAL, or SURDS, those incommensurable with unity.

13. NUMBERS, ODD, those that are not even, as 1, 3, 5, 7, &c.

14. NUMBERS, ODDLY ODD, those odd numbers which are measured by odd numbers. Thus 15 is a number oddly odd, because the odd number 3 measures it by the odd number 5.

15. NUMBERS, PERFECT, those whose aliquot parts added together make the whole number, as 6, 28; the aliquot parts of 6 being 3, 2, and 1=6; and those of 28 being 14, 7, 4, 2, 1=28.

16. NUMBERS, PLAIN, those arising from the multiplication of two numbers, as 6, which is the product of 3 by 2; and these numbers are called the *sides of the plane*.

17. NUMBERS, POLYGONAL, or POLYGONOUS, the sums of arithmetical progressions beginning with unity. These, where the common difference is 1, are called *triangular numbers*; where 2, *square numbers*; where 3, *pentagonal numbers*; where 4, *hexagonal numbers*; where 5, *heptagonal numbers*, &c.

18. NUMBERS, PRIMITIVE or PRIME, those divisible only by unity, as 5, 7, &c. And prime numbers among themselves are those which have no common measure besides unity, as 12 and 19.

19. NUMBERS, PYRAMIDAL, the sums of polygonous numbers, collected after the same manner as the polygons themselves, and not gathered out of arithmetical progressions, are called *first pyramidal numbers*; the sums of the first pyramidals are called *second pyramidals*, &c. If they arise out of triangular numbers, they are called *triangular pyramidal numbers*; if out of pentagons, *first pentagonal pyramidals*. From the manner of summing up polygonal numbers, it is easy to conceive how the prime pyramidal numbers are found, viz. $\frac{(a-2)n^3+3n^2-(a-5)n}{6}$ expresses all the prime pyramidals.

20. NUMBERS, RATIONAL, those commensurable with unity. A rational whole number is that whereof unity is an aliquot part; a rational broken number, that equal to some aliquot part of unity; and a rational mixed number, that consisting of a whole number and a broken one.

21. NUMBERS, SQUARE, are the product of any number multiplied by itself: thus 4, which is the factum of 2 by 2, is a square number. Even square number added to its root makes an even number.

22. NUMBERS, UNEVEN, those which exceed an even number, at least by unity, or which cannot be divided into two equal parts, as 3, 5, &c. The sum or difference of two uneven numbers makes an even number; but the factum of two uneven ones makes an uneven number. If an even number be added to an uneven one, or if the one be subtracted from the other, in the former case the sum, in the latter the difference, is an uneven number; but the factum of an even and uneven number is even. The sum of any even number of uneven numbers is an even number; and the sum of any uneven number of uneven numbers is an uneven number.

23. NUMBERS, UNEVENLY EVEN, numbers which may be equally divided by an uneven number, as 20 by 5.

24. NUMBERS, WHOLE, are otherwise called INTEGERS.

(VIII.) NUMBERS, ORATORICAL, POETICAL, &c. are certain measures, proportions, or cadences, which render a verse, period, or song, agreeable to the ear.

i. NUMBERS, POETICAL, consist in a certain harmony in the order, quantities, &c. of the feet and syllables, which make the piece musical to the ear, and fit for singing, for which all the verses of the ancients were intended. (See POETRY.) — It is of these numbers Virgil speaks in his 9th Eclogue, when he makes Lycidas say, *Numeros memini, si verba tenerem*; meaning, that although he had forgot the words of the verses, yet he remembered the feet and measure of which they were composed.

ii. NUMBERS, RHETORICAL, or PROSAIC, are a sort of simple unaffected harmony, less glaring than that of verse, but such as is perceived and affects the mind with pleasure. The numbers are that by which the style is said to be easy, free, round, flowing, &c. Numbers are absolutely necessary in all writing, and even in all speech. Hence Aristotle, Tully, Quintilian, &c. lay down many rules as to the best manner of intermixing dactyles, spondees, anapests, &c in order to have the numbers perfect. The substance of what they have said is reducible to what follows. 1. The style becomes numerous by the alternate disposition and temperature of long and short syllables, so as that the multitude of short ones neither render it too hasty, nor that of long ones too slow and languid: sometimes, indeed, long and short syllables are thrown together designedly, without any such mixture, to paint the slowness or celerity of any thing by that of the numbers; as in these verses of Virgil:

Illi inter sese magna vi brachia tollunt; and
Radit iter liquidum, celeres neque commovet alas.

2. The style becomes numerous by the intermixing words of one, two, or more syllables; whereas the two frequent repetition of monosyllables renders the style pitiful and grating. 3. It contributes greatly to the numerousness of a period, to have it closed by magnificent and well-sounding words. 4. The numbers depend not only on the nobleness of the words in the close, but of those in the whole tenor of the period. 5. To have the period flow easily and equally, the harsh concurrence of letters and words is to be studiously avoided; particularly the frequent meeting of rough consonants; the beginning the first syllable of a word with the last of the preceding; the frequent repetition of the same letter or syllable; and the frequent use of the like ending words. Lastly, the utmost care is to be taken, left, aiming at oratorical numbers, you should fall into poetical ones, and instead of prose, write verse.

* NUMBERER, *n. s.* [from *number*.] He who numbers.

* NUMBERLESS. *adj.* [from *number*.] Innumerable; more than can be reckoned.—

There cannot be those *numberless* offences
'Gainst me. *Shakespeare.*

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About his chariot *numberleſs* were pour'd
Cherub and ſeraph. *Milt. Par. Loſt.*
Deſerts ſo great,
Though *numberleſs*, I never ſhall forget. *Denh.*
—The ſoul converſes with *numberleſs* beings of her own creation. *Addiſon's Spectator.*—
Travels he then a hundred leagues,
And ſuffers *numberleſs* fatigues. *Swift's Miſcel.*

* NUMBLES. *n. ſ.* [*numbles*, Fr.] The entrails of a deer. *Bailey.*

* NUMBNESS. *n. ſ.* [from *numb.*] Torpor; interruption of action or ſenſation; deadneſs; ſtupefaction.—
Bequeath to death your *numbneſs*; for from him
Dear life redeems you. *Shak. Winter's Tale.*
Till length of years,
And ſedentary *numbneſs*, craze my limbs. *Milt.*
Cold *numbneſs* ſtraight bereaves
Her corps of ſenſe. *Denham.*
—It may proceed from a kind of *numbneſs* or ſtupidity of conſcience, and an abſolute dominion obtained by ſin over the ſoul, ſo that it ſhall not ſo much as dare to complain. *South.*

NUMENIA. See NEOMENIA, N° 1.

NUMENIUS, a philoſopher of the 2d century, who taught that the CHAOS from which the world was created was animated by a malevolent ſpirit.

* NUMERABLE. *adj.* [*numerabilis*, Latin.] Capable to be numbered.

(1.) * NUMERAL. *adj.* [*numeral*, Fr. from *numerus*, Lat.] Relating to number; conſiſting of number.—Some who cannot retain the ſeveral combinations of numbers in their diſtinct orders, and the dependence of ſo long a train of *numeral* progreſſions, are not able all their lifetime regularly to go over any moderate ſeries of numbers. *Locke.*

(2.) NUMERAL CHARACTERS OF THE ARABS, are thoſe figures which are now uſed in all the operations of arithmetic in every nation of Europe. We have elſewhere ſhown that the Arabs derived them moſt probably from India. (See ARITHMETIC, *Index.*) This opinion, however, though very generally received, has been controverted with ſome ingenuity. A writer in the Gentleman's Magazine thus endeavours to prove that the Arabs derived their notations from the Greeks: "I maintain (ſays he) that the Indians received their numeral characters from the Arabians, and the Arabians from the Greeks, as from them they derived all their learning, which in ſome things they improved, but for the moſt part have altered. The numerical figures which they received from the Greeks are proofs of this alteration; which is ſo great, that without particular attention one can ſcarce diſcover in them the veſtiges of their origin. But when we compare them carefully, and without prejudice, we find in them manifeſt traces of the Greek figures. The Greek numerical figures were no other than the letters of their alphabet. A ſmall ſtroke was the mark of unity. The β, being abridged of its two extremities, produced the 2. If you incline the γ a little on its left ſide, and cut off its foot, and make the left horn round towards the left ſide you will produce a 3. The δ makes the 4, by raiſing the right leg perpendicularly, and lengthening it a little below the baſe, and lengthening the baſe on the left ſide. The ε forms the 5, by turning the loweſt ſemicircle towards the right, which before was turned towards the left ſide. The number 5 forms the 6 by having its head taken off, and its body rounded. Z, by taking away the baſe, makes the 7. If we make the top and bottom of H round, we ſhall form an 8. The θ is the 9 with very little alteration. The cypher o was only a point, to which one of the figures was added to make it ſtand for ten times as much. It was neceſſary to mark this point very ſtrongly: and in order to form it better, a circle was made, which was filled up in the middle; but that circumſtance was afterwards neglected. Theophanes, an hiſtorian of Conſtantinople, who lived in the 9th century, ſays expreſsly, that the Arabians retained the Greek figures, having no characters in their language to repreſent all the numbers The Greeks obſerved in their numbers the decuple progreſſion, which the Arabians have retained. Certain characters are found in the Greek alphabet, which are not uſed in reading, but only in calculation; and for this reaſon they are ſtyled *Epiſemes*, that is to ſay, *notes*, *marks*, in order to diſtinguiſh them from letters. The number 6 derives its form from one of theſe epiſemes, which was called ϛιγμα, *Sau*. This epiſeme forms the letter F among the Æolians and the Latins. This was called the DIGAMMA, ſo ſtyled from its figure, which ſeems to have been one Γ placed upon another." That this reaſoning is plauſible will hardly be queſtioned; but whether it be concluſive, our readers muſt determine. It has not convinced ourſelves.

(3.) NUMERAL LETTERS, or NUMERALS, thoſe letters of the alphabet which are generally uſed for figures; as I, one; V, five; X, ten; L, fifty; C, a hundred; D, five hundred; M, a thouſand, &c. It is not agreed how the Roman numerals originally received their value. It has been ſuppoſed, that the Romans uſed M to denote 1000, becauſe it is the firſt letter of *mille*, the Latin for 1000; C, to denote 100, becauſe it is the firſt letter of *centum*, the Latin for 100; that D, being formed by dividing the old M in the middle, was therefore appointed to ſtand for 500, or half as much as the M ſtood for when it was whole; or more probably, that D ſtands for *dimidium mille*, the half of 1000: and that L, being half a C, was, for the ſame reaſon, uſed for 50: that V ſtood for 5, becauſe it is the 5th vowel; that X ſtood for 10, becauſe it contains V twice, one of them inverted; and that I was uſed for one, becauſe it is the firſt letter of *initium*, the beginning. But all theſe are fanciful derivations; and the following are perhaps equally ſo, though ſome think they afford the moſt natural account of the matter: The Romans probably put down a ſingle ſtroke, I, for one; this I they doubled, trebled, and quadrupled, to expreſs 2, 3, and 4; thus, II. III. IIII. So far they could eaſily number the ſtrokes with a glance of the eye. But they found, that if more were added, it would be neceſſary to tell the ſtrokes one by one; they therefore expreſſed 5 by joining two ſtrokes together in an acute angle, thus, V; which is the more probable, as the progreſſion of the Roman numbers is from 5 to 5, *i. e.* from the fingers

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on one hand to the fingers on the other.—After they had made this acute angle V for 5, they added the ſingle ſtrokes to it to the number of four, thus, VI. VII. VIII. VIIII. and then, to prevent confuſion, they doubled their acute angle by prolonging the two lines beyond their interſection, thus, X, to denote two fives, or ten. After this they doubled, trebled, and quadrupled, this double acute angle, thus, XX. XXX XXXX. They then joined two ſingle ſtrokes in another form, and inſtead of an acute angle, made a right angle, L, to denote 50. When this 50 was doubled, they then doubled the right angle, thus, Ⅽ, to denote 100; and having numbered this double right angle four times, thus, ⅭⅠ. ⅭⅠⅠ. ⅭⅠⅠⅠ. when they came to the fifth number, as before, they reverſed it, and put a ſingle ſtroke before it, thus, ⅠⅭ, to denote 500; and when this 500 was doubled, then they alſo doubled their double right angle, ſetting two double right angles oppoſite to each other, with a ſingle ſtroke between them, thus, ⅭⅠⅭ, to denote 1000: when this note for 1000 had been four times repeated, then they put down ⅠⅭↃ for 5000, ⅭⅠⅭↃↃ for 10,000, and ⅠⅭↃↃ for 50,000, ⅭⅠⅭⅠⅭↃↃ for 100,000, ⅠⅭↃↃↃ for 500,000, and ⅭⅠⅭⅠⅭↃↃↃ for 1,000,000. That the Romans did not originally write M for 1000, and C for 100, but ſquare characters, as they are written above, we are expreſsly informed by Paulus Manutius; but the corners of the angles being cut off by the tranſcribers for diſpatch, theſe figures were gradually brought into what are now numeral letters. When the corners of ⅭⅠⅭ were made round, it ſtood thus, ⅭⅠↃ, which is ſo near the Gothic ꝺ, that it ſoon deviated into that letter: ſo ⅠⅭ having the corner made round, it ſtood thus, ⅠↃ, and then eaſily deviated into D. Ⅽ alſo became a plain C by the ſame means; the ſingle rectangle which denoted 50, was, without alteration, a capital L; the double acute angle was an X; the ſingle acute angle a V conſonant; and a plain ſingle ſtroke, the letter I; and thus theſe ſeven letters, M, D, C, L, X, V, I, became numerals.

* NUMERALLY. *adv.* [from *numeral.*] According to number.—The blaſts and undulary breaths thereof, maintain no certainty in their courſe; nor are they *numerally* fear'd by navigators. *Brown's Vulgar Errours.*

* NUMERARY. *adj.* [*numerus*, Lat.] Any thing belonging to a certain number.—A ſupernumerary canon, when he obtains a prebend, becomes a *numerary* canon. *Ayliffe's Parergon.*

(1.) * NUMERATION. *n. ſ.* [*numeration*, Fr. *numeratio*, Lat.] 1. The art of numbering.—*Numeration* is but ſtill the adding of one unit more, and giving to the whole a new name or ſign, whereby to know it from thoſe before and after. *Locke.* 2. Number contained.—In the legs or organs of progreſſion in animals, we may obſerve an equality of length, and parity of *numeration. Brown.* 3. The rule of arithmetick which teaches the notation of numbers regularly noted.

(2.) NUMERATION. See ARITHMETIC, *Index.*

* NUMERATOR. *n. ſ.* [Latin.] 1. He that numbers. 2. [*Numerateur*, Fr.] That number which ſerves as the common meaſure to others.

NUMERIANUS, M. Aurelius, an emperor of Rome, who ſucceeded his father Carus, along with his brother Carinus, A. D. 282, but was murdered by his father-in-law, Aper, 8 months after. See CARUS, N° 2; and ROME.

(1.) * NUMERICAL. *adj.* [from *numerus*, Latin.] 1. Numeral; denoting number; pertaining to numbers.—The *numerical* characters are helps to the memory, to record and retain the ſeveral ideas about which the demonſtration is made. *Locke.* 2. The ſame not only in kind or ſpecies, but number.—Contemplate upon his aſtoniſhing works, particularly in the reſurrection and reparation of the ſame *numerical* body, by a re-union of all the ſcattered parts. *South.*

(2.) NUMERICAL ALGEBRA, that which makes uſe of numbers, inſtead of letters of the alphabet.

(3.) NUMERICAL DIFFERENCE, that by which one man is diſtinguiſhed from another. A thing is ſaid to be numerically the ſame, when it is ſo in the ſtricteſt ſenſe of the word.

* NUMERICALLY. *adv.* [from *numerical.*] With reſpect to ſameneſs in number.—I muſt think it improbable, that the ſulphur of antimony would be but *numerically* different from the diſtilled butter or oil of roſes. *Boyle.*

* NUMERIST. *n. ſ.* [from *numerus*, Latin.] One that deals in numbers.—We cannot aſſign a reſpective fatality unto each, which is concordant unto the doctrine of the *numeriſts. Brown.*

* NUMEROSITY. *n. ſ.* [from *numeroſus*, Lat.] 1. Number; the ſtate of being numerous.—Of aſſertion, if *numeroſity* of aſſertors were a ſufficient demonſtration, we might ſit down herein as an unqueſtionable truth. *Brown.* 2. Harmony; numerous flow.

* NUMEROUS. *adj.* [*numeroſus*, Latin.] 1. Containing many; conſiſting of many; not few; many.—Queen Elizabeth was not ſo much obſerved for having a *numerous* as a wiſe council. *Bacon.*—

We reach our foes,
Who now appear ſo *numerous* and bold. *Waller.*

—Many of our ſchiſms in the weſt were never heard of by the *numerous* Chriſtian churches in the eaſt of Aſia. *Leſley.* 2. Harmonious; conſiſting of parts rightly numbered; melodious; muſical.—

Thy heart, no ruder than the rugged ſtone,
I might, like Orpheus, with my *num'rous* moan
Melt to compaſſion. *Waller.*

—His verſes are ſo *numerous*, ſo various, and ſo harmonious, that only Virgil, whom he profeſſedly imitated, has ſurpaſſed him. *Dryden.*

* NUMEROUSNESS. *n. ſ.* [from *numerous.*] 1. The quality of being *numerous.* 2. Harmony; muſicalneſs.—That which will diſtinguiſh his ſtyle, is the *numerouſneſs* of his verſe. *Dryden.*

NUMIDA, in ornithology, a genus belonging to the order of gallinæ. On each ſide of the head there is a kind of coloured fleſhy horn; and the beak is furniſhed with cere near the noſtrils.

1. NUMIDA CRISTATA, the *creſted Guinea hen*, a ſpecies mentioned by Mr Latham, inhabits Africa. Perhaps it may have ſome relation to the creſted ſort which Marcgrave mentions to have ſeen, and which came from Sierra Leone. This had a kind of membranous collar about the neck, was of a bluiſh aſh-colour, and had a large roundiſh black creſt. Buffon, who deſcribes it at great length, calls it *la peintade.* Linnæus and Gmelin call it

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Numida Meleagris, &c. Ray and Will call it *gallus* and *gallina Guineenſis*, &c. Mr Pennant contends, and ſeems to prove, that the pintadoes had been early introduced into Britain, at leaſt prior to the year 1277 But they ſeem to have been much neglected on account of the difficulty of rearing them; for they occur not in our ancient bills of fare. They have a double caruncle at the chaps, and no ſuch at the throat.

2. NUMIDIA MELEAGRIS, the GUINEA HEN, is a native of Africa. It is larger than a common hen. Its body is ſloped like that of a partridge, and its colour is all over a dark grey, very beautifully ſpotted, with ſmall white ſpecks; there is a black ring round the neck; its head is reddiſh, and it is blue under the eyes. They naturally herd together in large numbers, and breed up their young in common; the females taking care of the broods of others, as well as of their own. Barbut informs us, that in Guinea they go in flocks of 200 or 300, perch on trees, and feed on worms and graſhoppers; that they are run down and taken by dogs; and that their fleſh is tender and ſweet, generally white, though ſometimes black. They breed very well with us. Mr Latham obſerves, "that the native place of this bird is without doubt Africa, and that it is the meleagris of old authors. It is ſuppoſed originally to have come from Nubia, and was eſteemed in the Roman banquets. It has been met with wild, in flocks of two or three hundred, by various travellers. Dampier found them in numbers in the iſland of Mayo; and Forſter ſpeaks of them as numerous at St Jago; but they have been tranſported into the Weſt Indies and America, and are now in a wild ſtate in thoſe places as well as domeſticated." The white-breaſted one is a mere variety, of which there are many: it is moſtly found in Jamaica.

3. NUMIDA MITRATA, is a different and not a common ſpecies: it inhabits Madagaſcar and Guinea. Pallas ſeems to think that it may be the bird mentioned by Columella, as differing from the common one; and will account for Pliny's having thought the numida and meleagris to be different birds.

NUMIDÆ See NOMADES.

(1.) NUMIDIA, an ancient kingdom of Africa, bounded on the north by the Mediterranean Sea; on the ſouth by Gætulia, or part of Lybia Interior; on the weſt by the Mulucha, a river which ſeparated it from Mauritania; and on the eaſt by the Tuſca, another river that bounded it in common with Africa Propria. Dr Shaw has rendered it probable, that the river formerly named *Malva*, *Malvana*, *Mulucha*, or *Molochath*, is the ſame with that now called MULLOOIAH by the Algerines; in which caſe, the kingdom of Numidia muſt have extended upwards of 500 miles in length: its breadth, however, cannot be ſo well aſcertained; but ſuppoſing it to have been the ſame with that of the preſent kingdom of Algiers, in the narroweſt part it muſt have been at leaſt 40 miles broad, and in the wideſt upwards of 100.

(2.) NUMIDIA, ANCIENT DIVISIONS OF. This country included two diſtricts; one inhabited by the MASSYLI, and the other by the MASÆSYLI; the latter being alſo called in after times MAURITANIA CÆSARIENSIS, and the former NUMIDIA PROPRIA. The country of the Maſſyli, or, as ſome call it, *Terra Tagonitis*, was ſeparated from the proper territory of Carthage by its eaſtern boundary, the river Tuſca, and from the kingdom of the Maſæſyli, or Mauritania Cæſarienſis, by the river Ampſaga. It ſeems to correſpond with that part of the province of Conſtantina lying between the Zaine and the Wed al Kibeer, which is above 130 miles long, and more than 100 broad. The ſea-coaſt of this province is for the moſt part mentioned as rocky, anſwering to the appellation given to it by Abulfeda, viz. *El Edwaa*, *the high* or *lofty*. It is far from being equal in extent to the ancient country of the Maſæſyli, which, Strabo informs us, was yet inferior to the country of the Maſſyli. Its capital was Cirta, a place of very conſiderable note among the ancients.

(3.) NUMIDIA, ANCIENT INHABITANTS OF. The moſt celebrated antiquarians agree, that the tract, extending from the iſthmus of Suez to the lake Tritonis, was chiefly peopled by the deſcendants of Mizraim, and that the poſterity of his brother Phut, ſpread themſelves all over the country between that lake and the Atlantic ocean. Herodotus countenances this, for he tells us, that the Lybian Nomades, whoſe territories on the W. were bounded by the Triton, agreed in their cuſtoms and manners with the Egyptians; but that the Africans, from that river to the Atlantic ocean, differed in almoſt all points from them. Ptolemy mentions a city called PUTEA near Adrametum; and Pliny, a river of Mauritania Tingitana, known by the name of *Fut*, or *Phut*; and the diſtrict adjacent to this river was called *Regio Phutenſis*, which plainly alludes to the name of *Phut*. That word ſignifies *ſcattered* or *diſperſed*, which very well agrees with what Mela and Strabo relate of the ancient Numidians; ſo that we may admit the aborigines of this country to have been the deſcendants of Phut.

(4.) NUMIDIA, HISTORY OF, TILL THE DEFEAT OF SYPHAX. The hiſtory of Numidia, during many of the early ages is buried in oblivion. It is probable, however, that as the Phœnicians were maſters of a great part of the country, theſe tranſactions had been recorded, and generally known to the Carthaginians. Jarbas or Hiarbas probably reigned here as well as in Africa Proper, if not in Mauritania, and other parts of Lybia, when Dido began to build Byrſa. Juſtin ſays, that about the age of Herodotus, the people of this country were called both *Africans* or *Libyans*, and *Numidians*. He likewiſe intimates, that about this time the Carthaginians vanquiſhed both the Moors or Mauritanians and Numidians; in conſequence of which they were excuſed from paying the tribute which had hitherto been demanded of them. After the concluſion of the firſt Punic war, the African troops carried on a bloody conteſt againſt their maſters the Carthaginians; and the moſt active in this rebellion, according to Diodorus Siculus, were a part of the Numidian nation named MICATANIANS. This ſo incenſed the Carthaginians, that after Hamilcar had either killed or taken priſoners all the mercenaries, he ſent a large detachment to ravage the country of thoſe Numidians

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dians. That detachment executed his orders with the utmoſt cruelty; plundering the diſtrict, and crucifying all the priſoners without diſtinction. This filled the reſt with ſuch indignation and reſentment, that both they and their poſterity ever afterwards bore an implacable hatred to the Carthaginians. In the time of the 2d Punic war, Syphax king of the Maſæſyli entered into an alliance with the Romans, and gave the Carthaginians a conſiderable defeat. This induced Gala, king of the Maſſyli, to conclude a treaty with the Carthaginians, in conſequence of which his ſon Maſiniſſa marched at the head of a powerful army to give Syphax battle. The conteſt ended in favour of Maſiniſſa; 30,000 Maſæſyli were put to the ſword, and Syphax driven into Mauritania; and the like bad ſucceſs attended Syphax in another engagement, where his troops were entirely defeated and diſperſed.

(5.) NUMIDIA, HISTORY OF, TILL THE ESTABLISHMENT OF MASINISSA ON THE THRONE. Gala dying whilſt his ſon Maſiniſſa was acting at the head of the Numidian troops ſent to the aſſiſtance of the Carthaginians in Spain, his brother Deſalces, according to the rules of ſucceſſion in Numidia, took poſſeſſion of the Maſſylian throne. That prince dying ſoon after, Capuſa his eldeſt ſon ſucceeded him. But he did not long enjoy his high dignity; for one Mezetulus a perſon of the royal blood, but an enemy to the family of Gala, excited a great part of his ſubjects to revolt. A battle ſoon took place between him and Capuſa, in which the latter was ſlain, with many of the nobility, and his army entirely defeated. But though Mezetulus thus became poſſeſſed of the ſovereignty, he did not think proper to aſſume the title of *king*, but ſtyled himſelf guardian to Lacumaces, the ſurviving ſon of Deſalces, whom he graced with the royal title. To ſupport himſelf in his uſurpation he married the dowager of Deſalces, who was Hannibal's niece, and conſequently of the moſt powerful family in Carthage. To attain the ſame end, he ſent ambaſſadors to Syphax, to conclude a treaty of alliance with him. In the mean time Maſiniſſa, receiving advice of his uncle's death, of his couſin's ſlaughter, and of Mezetulus's uſurpation, immediately paſſed over to Africa, and went to the court of Bocchar, king of Mauritania, to ſolicit ſuccours. Bocchar, ſenſible of the great injuſtice done Maſiniſſa, gave him a body of 4000 Moors to eſcort him to his dominion. His ſubjects, having been appriſed of his approach, joined him upon the frontiers with a party of 500 men. The Moors, in purſuance of their orders, returned home; as ſoon as Maſiniſſa reached the confines of his kingdom. Notwithſtanding which, and the ſmall body that declared for him, having accidentally met Lacumaces at Thapſus with an eſcort going to implore Syphax's aſſiſtance, he drove him into the town, which he carried by aſſault, after a faint reſiſtance. However, Lacumaces, with many of his men, eſcaped to Syphax. The fame of this exploit gained Maſiniſſa ſo great credit, that the Numidians flocked to him from all parts, and, amongſt the reſt, many of his father Gala's veterans, who preſſed him to make a ſpeedy and vigorous puſh for his hereditary dominions. Lacumaces having joined Mezetulus with a reinforcement of Maſæſylians, which he had prevailed upon Syphax to ſend to the aſſiſtance of his ally, the uſurper advanced at the head of a numerous army to offer Maſiniſſa battle; which that prince, though much inferior in numbers, did not decline. Hereupon an engagement enſued; which, notwithſtanding the inequality of numbers, ended in the defeat of Lacumaces. The immediate conſequence of this victory of Maſiniſſa was a quiet and peaceable poſſeſſion of his kingdom; Mezetulus and Lacumaces, with a few that attended them, flying into the territories of Carthage.

(6.) NUMIDIA, HISTORY OF, TILL THE OVERTHROW OF MASINISSA BY SYPHAX. Notwithſtanding this ſucceſs, Maſiniſſa being apprehenſive that he ſhould be obliged to ſuſtain a war againſt Syphax, he offered to treat Lacumaces with as many marks of diſtinction as his father Gala had Deſalces, provided that prince would put himſelf under his protection. He alſo promiſed Mezetulus pardon, and a reſtitution of all the effects forfeited by his treaſonable conduct, if he would make his ſubmiſſion to him. Both of them readily complied with the propoſal, and immediately returned home; ſo that the tranquillity and repoſe of Numidia would have been ſettled upon a ſolid and laſting foundation, had not this been prevented by Aſdrubal, who was then at Syphax's court. He inſinuated to that prince, who was diſpoſed to live amicably with his neighbours, "That he was greatly miſtaken, if he imagined Maſiniſſa would be ſatisfied with his hereditary dominions: That he was a prince of much greater capacity and ambition, than either his father Gala, his uncle Deſalces, or any of his family: That he had diſcovered in Spain, marks of a moſt rare and uncommon merit. And that, in fine, unleſs this riſing flame was extinguiſhed before it came to too great a head, both the Maſæſylian and Carthaginian ſtates would be infallibly conſumed by it," Syphax alarmed by theſe ſuggeſtions, advanced with a numerous body of forces into a diſtrict which had long been in diſpute between him and Gala, but was then in poſſeſſion of Maſiniſſa. This brought on a general action between theſe two princes; wherein the latter was totally defeated, his army diſperſed, and he himſelf obliged to fly to the top of mount Balbus, attended only by a few of his horſe. Such a deciſive battle at this juncture, before Maſiniſſa was fixed in his throne, could not but put Syphax in poſſeſſion of the kingdom of the Maſſyli. Maſiniſſa in the mean time made nocturnal incurſions from his poſt upon mount Balbus, and plundered all the adjacent country, particularly that part of the Carthaginian territory contiguous to Numidia. This diſtrict he not only thoroughly pillaged, but likewiſe laid waſte with fire and ſword, carrying off an immenſe booty, which was bought by ſome merchants, who had put into one of the Carthaginian ports for that purpoſe. In fine, he did the Carthaginians more damage, not only by committing ſuch dreadful devaſtations, but by maſſacring and carrying into captivity vaſt numbers of their ſubjects on this occaſion, than they could have ſuſtained in a pitched battle, or one campaign of a regular war. Syphax, at the preſſing and reite-

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rated inſtances of the Carthaginians, ſent Bocchar, one of his moſt active commanders with a detachment of 4000 foot, and 2000 horſe, to reduce this peſtilent gang of robbers, promiſing him a great reward if he could bring Maſiniſſa either alive or dead. Bocchar, watching an opportunity, ſurpriſed the Maſſylians, as they were ſtraggling about the country without any order or diſcipline; ſo that he took many priſoners, diſperſed the reſt, and purſued Maſiniſſa himſelf, with a few of his men to the top of the mountain where he had before taken poſt. Conſidering the expedition as ended, he not only ſent many head of cattle, and the other booty that had fallen into his hands, to Syphax, but likewiſe all the forces, except 500 foot and 300 horſe. With this detachment he drove Maſiniſſa from the ſummit of the hill, and purſued him through ſeveral narrow paſſes and defiles, as far as the plains of Clupea. Here he ſo ſurrounded him, that all the Maſſylians except four, were put to the ſword, and Maſiniſſa himſelf, after having received a dangerous wound, eſcaped with the utmoſt difficulty. As this was effected by croſſing a rapid river, in which attempt two of his four attendants periſhed in the ſight of the detachment that purſued him, it was rumoured all over Africa, that Maſiniſſa alſo was drowned. For ſome time he lived undiſcovered in a cave, where he was ſupported by the robberies of the two horſemen that had made their eſcapé with him. But having cured his wound by the application of ſome medicinal herbs, he boldly began to advance towards his own frontiers. In his march he was joined by about 40 horſe, and, ſoon after his arrival among the Maſſyli, ſo many people flocked to him from all parts, that out of them he formed an army of 6000 foot and 4000 horſe. With theſe forces he not only reinſtated himſelf in the poſſeſſion of his dominions, but likewiſe laid waſte the borders of the Maſæſyli. This ſo irritated Syphax, that he immediately aſſembled a body of troops, and encamped very commodiouſly upon a ridge of mountains between Cirta and Hippo. His army he commanded in perſon; and detached his ſon Vermina, with a conſiderable force, to take a compaſs, and attack the enemy in the rear. In purſuance of his orders, Vermina ſet out in the beginning of the night, and took poſt in the place appointed him, without being diſcovered by the enemy. In the mean time Syphax decamped, and advanced towards the Maſſyli, to give them battle. When he had poſſeſſed himſelf of a riſing ground that led to their camp, and concluded that his ſon Vermina muſt have formed the ambuſcade behind them, he began the fight. Maſiniſſa being advantageouſly poſted, and his ſoldiers diſtinguiſhing themſelves in an extraordinary manner, the diſpute was long and bloody. But Vermina unexpectedly falling upon their rear, and thus obliging them to divide their forces, which were ſcarce able before to oppoſe the main body under Syphax, they were ſoon thrown into confuſion, and forced to betake themſelves to a precipitate flight. All the avenues being blocked up, partly by Syphax and partly by his ſon, ſuch a dreadful ſlaughter was made of the unhappy Maſſyli, that only Maſiniſſa himſelf, with 60 horſe, eſcaped to the Leſſer Syrtis. Here he remained betwixt the confines of the Carthaginians and Garamantes, till the arrival of Lælius and the Roman fleet on the coaſt of Africa. For what happened immediately after this junction with the Romans, ſee ROME.

(7.) NUMIDIA, HISTORY OF, TILL THE DEATH OF MASINISSA. By the aſſiſtance of Lælius, Maſiniſſa at laſt reduced Syphax's kingdom. According to Zonoras, Maſiniſſa and Scipio, before the memorable battle of Zama, by a ſtratagem, deprived Hannibal of ſome advantageous poſts; which, with a ſolar eclipſe happening during the heat of the action, and not a little intimidating the Carthaginian troops, greatly contributed to the victory the Romans obtained. At the concluſion, therefore, of the ſecond Punic war, he was amply rewarded by the Romans for the important ſervices he had done them. As for Syphax, after the loſs of his dominions, he was kept in confinement for ſome time at Alba; whence being removed to grace Scipio's triumph, he died at Tibur in his way to Rome. Zonoras, adds, that his corpſe was decently interred; that all the Numidian priſoners were releaſed; and that Vermina, by the aſſiſtance of the Romans, took peaceable poſſeſſion of his father's throne. However, part of the Maſæſylian kingdom had been before annexed to Maſiniſſa's dominions, to reward that prince for his ſingular fidelity and attachment to the Romans. This is countenanced by the epitomizer of Livy, who ſays, that Syphax's family, for a conſiderable time after the 2d Punic war, reigned in part of Numidia; and that Archobarzanes, Syphax's grandſon, hovered with a powerful army of Numidians upon the Carthaginian frontiers a few years before the beginning of the 3d Punic war. To complete the hiſtory of MASINISSA, we need only mention ſome points of his conduct towards the decline and cloſe of life; and ſome particulars relating to his character, genius, and habit of body, drawn from the moſt celebrated Greek and Roman authors. By drawing a line of circumvallation around the Carthaginian army under Aſdrubal, poſted upon an eminence, Maſiniſſa cut off all manner of ſupplies from them; which introduced both the plague and famine into their camp. As the body of Numidian troops employed in this blockade was not near ſo numerous as the Carthaginian forces, it is evident, that the line here mentioned muſt have been extremely ſtrong, and conſequently the effect of great labour and art. The Carthaginians, finding themſelves reduced to the laſt extremity, concluded a peace upon the following terms, which Maſiniſſa dictated: 1. That they ſhould deliver up all deſerters. 2. That they ſhould recal their exiles, who had taken refuge in his dominions. 3. That they ſhould pay him 5000 talents of ſilver within 50 years. 4. That their ſoldiers ſhould paſs under the yoke, each carrying off only a ſingle garment. As Maſiniſſa himſelf, though between 80 and 90 years of age, conducted the whole enterpriſe, he muſt have been extremely well verſed in fortification, and other branches of the military art. His underſtanding likewiſe he retained to the laſt. This happened a ſhort time before the beginning of the 3d Punic war. See CARTHAGE, § 6. Soon after, the conſuls landed an

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an army in Africa, in order to lay ſiege to Carthage, without imparting to Maſiniſſa their deſign. This not a little chagrined him, as it was contrary to the former practice of the Romans; who, in the preceding war, had communicated their intentions to him, and conſulted him on all occaſions. When, therefore, the conſuls applied to him for a body of his troops to act in concert with their forces, he anſwered, "That they ſhould have a reinforcement when they ſtood in need of it." It could not but be provoking to him, that after he had extremely weakened the Carthaginians, and even brought them to the brink of ruin, his pretended imperious friends ſhould come to reap the fruits of his victory, without giving him the leaſt intelligence of it. However, his mind ſoon returned to its natural bias, in favour of the Romans. Finding his end approaching, he ſent to Æmilianus, then a tribune in the Roman army, to deſire a viſit from him. What he propoſed by this viſit, was to inveſt him with full powers to diſpoſe of his kingdom and eſtate as he ſhould think proper, for the benefit of his children. The high idea he had entertained of that young hero's abilities and integrity, together with his gratitude and affection for the family into which he was adopted, induced him to take this ſtep. But, believing that death would not permit him to have a perſonal conference with Æmilianus upon this ſubject, he informed his wife and children in his laſt moments, that he had empowered him to diſpoſe in an abſolute manner of all his poſſeſſions, and to divide his kingdom amongſt his ſons. To which he ſubjoined, "I require, that whatever Æmilianus may decree, ſhall be executed as punctually as if I myſelf had appointed it by my will." Having uttered theſe words he expired. (See MASINISSA.) This prince, during his youth, had met with ſtrange reverſes of fortune. However, ſays Appian, being ſupported by the Divine protection, he enjoyed an uninterrupted courſe of proſperity for a long ſeries of years. His kingdom extended from Mauritania to the weſtern confines of Cyrenaica; whence it appears, that he was one of the moſt powerful princes of Africa. Many of the inhabitants of this vaſt tract he civilized, teaching them to cultivate their ſoil, and to reap thoſe natural advantages which the fertility of their country offered them. He was of a more robuſt habit of body than any of his cotemporaries, being bleſſed with the greateſt health and vigour; which was doubtleſs owing to his temperance. Nothing can better evince the ſtrength of his conſtitution, than the age of his youngeſt ſon, *Stembal*, who was only four years old at his deceaſe. Though above 90 years of age, he performed all the exerciſes uſed by young men, and always rode without a ſaddle. Pliny tells us, that he reigned above 60 years. He was an able commander, and greatly facilitated the reduction of Carthage. Suidas relates, that to the laſt he could mount his horſe without aſſiſtance. According to Appian, he left a numerous well-diſciplined army, and an immenſe quantity of wealth, behind him. Maſiniſſa, before his death, gave his ring to his eldeſt ſon Micipſa; but left the diſtribution of all his other effects and poſſeſſions amongſt his children entirely to Æmilianus. Of 54 ſons that ſurvived him, only three were legitimate, to wit, Micipſa, Guluſſa, and Maſtanabal. Æmilianus, arriving at Cirta after he had expired, divided his kingdom, or rather the government of it, amongſt theſe three, though to the others he gave conſiderable poſſeſſions. To Micipſa, the eldeſt, who was of a pacific diſpoſition, he aſſigned Citra, the metropolis, for the place of his reſidence, in excluſion of the others. Guluſſa, the next to him, being a prince of a military genius, had the command of the army, and the tranſacting of all affairs relating to peace or war. And Maſtanabal, the youngeſt, had the adminiſtration of juſtice, an employment ſuitable to his education, allotted him. They enjoyed in common the immenſe treaſures Maſiniſſa had amaſſed, and were all of them dignified by Æmilianus with the royal title. After he had made theſe diſpoſitions, he departed from Cirta, taking with him a body of Numidian troops, under the conduct of Guluſſa, to reinforce the Roman army that was then acting againſt the Carthaginians.

(8.) NUMIDIA, HISTORY OF, TO THE DEATH OF MICIPSA. Maſtanabal and Guluſſa died ſoon after their father. The latter had continued to aſſiſt the Romans in the third Punic war, and the former was pretty well verſed in the Greek language. Micipſa therefore became ſole monarch of Numidia. In his reign, according to Oroſius, a great part of Africa was covered with locuſts, which deſtroyed all the produce of the earth, and even devoured dry wood. But at laſt they were all carried by the wind into the African ſea, out of which being thrown in vaſt heaps upon the ſhore, a plague enſued, which ſwept away an infinite number of animals of all kinds. In Numidia alone 800,000 men periſhed, and in Africa Propria 200,000; amongſt the reſt, 30,000 Roman ſoldiers quartered in and about Utica for the defence of the laſt province. At Utica, in particular, the mortality raged to ſuch a degree, that 1500 dead bodies were carried out of one gate in a day. Micipſa had two ſons, Adherbal and Hiempſal, whom he educated in his palace, together with his nephew Jugurtha. That young prince was the ſon of Maſtanabal; but his mother having been only a concubine, Maſiniſſa had taken no great notice of him. However, Micipſa conſidering him as a prince of the blood, took as much care of him as he did of his own children. Jugurtha poſſeſſed ſeveral eminent qualities, which gained him univerſal eſteem. He was very handſome, endued with great ſtrength of body, and adorned with the fineſt intellectual endowments. He exerciſed himſelf in running, riding, hurling the javelin, and other manly exerciſes, ſuited to the martial genius of the Numidians. The chace was his chief delight; but it was that of lions and other ſavage beaſts. Salluſt, to finiſh his character, tells us, that he excelled in all things, and ſpoke very little of himſelf. His talents at firſt charmed Micipſa, who thought them an ornament to his kingdom. But he ſoon began to reflect, that he was conſiderably advanced in years, and his children in their infancy; that mankind naturally thirſt after power, and often ſtick at nothing to gratify their ambition. Theſe reflections excited his jealouſy, and determined him to expoſe

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poſe Jugurtha to various dangers, ſome of which he hoped, might prove fatal to him. For this purpoſe he gave him the command of a body of forces which he ſent to aſſiſt the Romans, who were then beſieging Numantia. But Jugurtha, by his admirable conduct, not only eſcaped all danger, but acquired the eſteem of the whole army, and Scipio ſent a high character of him to his uncle Micipſa, while he alſo gave him ſome prudent advice in relation to his future conduct. After his return from Spain the whole nation almoſt adored him. The heroic bravery he had ſhown there, his undaunted courage, joined to the utmoſt calmneſs of mind, and above all the advantageous teſtimonials of his conduct given by Scipio, attracted an univerſal eſteem. Micipſa himſelf, charmed with the high idea the Roman general had entertained of his merit, changed his behaviour towards him; reſolving, if poſſible, to win his affection by kindneſs. He therefore adopted him, and declared him joint heir with his two ſons to the crown. Finding ſome few years afterwards, that his end approached, he ſent for all three to his bed-ſide; where, in the preſence of the whole court, he deſired Jugurtha to recollect with what extreme tenderneſs he had treated him, and conſequently to conſider how well he had deſerved at his hands. He then intreated him to protect his children on all occaſions; who, being before related to him by the ties of blood, were now by their father's bounty become his brethren. To fix him the more firmly in their intereſt, he likewiſe complimented him upon his bravery, addreſs, and conſummate prudence. He farther inſinuated, that neither arms nor treaſures conſtitute the ſtrength of a kingdom, but friends, who are neither won by arms nor gold, but by real ſervices, and an inviolable fidelity. Then addreſſing himſelf to Adherbal and Hiempſal, "And you (ſaid he) I enjoin to pay the higheſt reverence to Jugurtha. Endeavour to imitate, and if poſſible ſurpaſs, his exalted merit, that the world may not hereafter obſerve Micipſa's adopted ſon to have reflected greater glory upon his memory than his own children." Soon after, Micipſa, who, according to Diodorus, was a prince of an amiable character, expired.

(9.) NUMIDIA, HISTORY OF, TO THE DEFEAT OF JUGURTHA AT THALA. Micipſa's kindneſs made no impreſſion on the mind of the ungrateful Jugurtha. Soon after the old king's death, he found means to aſſaſſinate Hiempſal in the city of Thirmida where his treaſures were depoſited, and drive Adherbal out of his dominions. That unhappy prince fled to Rome, where he endeavoured to engage the ſenate to eſpouſe his quarrel; but, notwithſtanding the juſtice of his cauſe, they had not virtue enough to ſupport him. Jugurtha's ambaſſadors, by diſtributing vaſt ſums of money amongſt the ſenators, brought them ſo far over, that a majority palliated his inhuman proceedings. This encouraged thoſe miniſters to pretend that Hiempſal had been killed by the Numidians on account of his exceſſive cruelty, and that Adherbal was the aggreſſor in the late troubles. They therefore intreated the ſenate to judge of Jugurtha's behaviour in Africa from his conduct at Numantia, rather than from the ſuggeſtion of his enemies. Upon which the majority of the ſenate declared in his favour. A few, however, who were not abandoned to corruption, inſiſted upon bringing him to condign puniſhment. But as they could not prevail, he had the beſt part of Numidia allotted him, and Adherbal was forced to reſt ſatisfied with the remainder. Jugurtha, finding now that every thing was venal at Rome, thought he might purſue his towering projects without any obſtruction from that quarter. He therefore threw off the maſk, and attacked his couſin by open force. As Adherbal was a prince of a pacific diſpoſition, and in almoſt all reſpects the reverſe of Jugurtha, he was by no means a match for him. The latter therefore pillaged his territories, ſtormed ſeveral of his fortreſſes, and over-ran a great part of his kingdom without oppoſition. Adherbal, depending on the friendſhip of the Romans, which his father in his laſt moments aſſured him would be a ſtronger ſupport to him than all the troops and treaſures in the univerſe, diſpatched deputies to Rome to complain of theſe hoſtilities. But whilſt he loſt his time in ſending thither fruitleſs deputations, Jugurtha overthrew him in a pitched battle, and ſoon after ſhut him up in Cirta. During the ſiege of this city, Roman commiſſioners arrived there, to perſuade both parties to an accommodation; but finding Jugurtha untractable, they returned without ſo much as conferring with Adherbal. A ſecond deputation, compoſed of ſenators, with Æmilius Scaurus, preſident of the ſenate, at their head, landed ſome time after at Utica, and ſummoned Jugurtha to appear before them. That prince at firſt ſeemed to be under dreadful apprehenſions, eſpecially as Scaurus reproached him with his enormous crimes, and threatened him with the reſentment of the Romans, if he did not immediately raiſe the ſiege of Cirta. However, the Numidian, by his addreſs, and the irreſiſtible power of his gold, ſo mollified Scaurus, that he left Adherbal at his mercy. In fine, Jugurtha had at laſt Cirta ſurrendered to him, upon condition only that he ſhould ſpare the life of Adherbal. But the mercileſs tyrant, in violation of the laws of humanity as well as the capitulation, when he had got poſſeſſion of the town, ordered him to be put to a moſt cruel death. The merchants likewiſe, and all the Numidians in the place capable of bearing arms, he cauſed without diſtinction to be put to the ſword. Every perſon of humanity at Rome was ſtruck with horror at the news of this tragical event. Yet all the venal ſenators ſtill concurred with Jugurtha's miniſters in palliating his enormous crimes. Notwithſtanding which, the people, excited by Caius Memmius their tribune, who bitterly inveighed againſt the venality of the ſenate, reſolved not to let ſo flagrant an inſtance of villainy go unpuniſhed. This induced the Senate likewiſe to declare their intention to chaſtiſe Jugurtha. For this purpoſe an army was levied to invade Numidia, and the command of it given to the conſul Calpurnius Beſtia, a perſon of great abilities but of the moſt inſatiable avarice. Jugurtha being informed of theſe great preparations, ſent his ſon to Rome, to avert the impending ſtorm, plentifully ſupplied with money. But Beſtia, in the hopes of great advantages

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advantages from an invaſion of Numidia, defeated all his intrigues, and got a decree paſſed, ordering him and his attendants to depart Italy in ten days, unleſs they were come to deliver up the king himſelf, and all his territories, to the republic. This decree being notified to them, they returned without ſo much as having entered the gates of Rome; and the conſul ſoon after landed with a powerful army in Africa. For ſome time he carried on the war very briſkly, he reduced ſeveral ſtrong holds, and took many Numidians priſoners. But upon the arrival of Scaurus, a peace was granted Jugurtha upon advantageous terms. That prince coming from Vaca, the place of his reſidence, to the Roman camp, to confer with Beſtia and Scaurus, and the preliminaries of the treaty being immediately after ſettled between them in private conferences, every body at Rome was convinced that the preſident of the ſenate and the conſul had to their avarice ſacrificed the republic. The indignation therefore of the people in general diſplayed itſelf in the ſtrongeſt manner. Memmius alſo fired them with his ſpeeches. It was therefore reſolved to diſpatch the prætor Caſſius, a man they could confide in, to Numidia, to prevail upon Jugurtha to come to Rome, that they might learn from himſelf which of their generals and ſenators had been ſeduced by the peſtilent influence of corruption. Upon his arrival there he bribed one Bæbius Salca, a man of great authority amongſt the plebeians, but of inſatiable avarice, by whoſe aſſiſtance he not only eluded all the endeavours of the people of Rome to bring him to juſtice, but likewiſe enabled Bomilcar, one of his attendants, to get Maſſiva, an illegitimate ſon of Micipſa, aſſaſſinated in the ſtreets of Rome. That young prince was adviſed by many Romans of probity, well-wiſhers to the family of Maſiniſſa, to apply for the kingdom of Numidia; which coming to Jugurtha's ears, he prevented the application by this execrable ſtep. However, he was obliged to leave Italy immediately. Jugurtha had ſcarce ſet foot in Africa, when he received advice that the ſenate had annulled the ſhameful peace concluded with him by Beſtia and Scaurus. Soon after, the conſul Albinus tranſported a Roman army into Numidia. Flattering himſelf with the hopes of reducing Jugurtha to reaſon, he found himſelf deceived; for that crafty prince, by various artifices, ſo amuſed and impoſed upon Albinus, that nothing of moment happened that campaign. His brother Aulus, who ſucceeded him in the command of the army, was ſtill more unſucceſsful; for after a fruitleſs attempt to beſiege Suthel, where the king's treaſures were depoſited, he marched his forces into a defile out of which he found it impoſſible to extricate himſelf. He therefore was obliged to ſubmit to the ignominious ceremony of paſſing under the *Yoke*, with all his men, and to quit Numidia in ten days, to ſave his troops from immediate deſtruction. This ſcandalous treaty was declared void at Rome, as being concluded without the authority of the people. The Roman troops retired into Africa Propria, which they had now reduced into the form of a Roman province. In the mean time Caius Mamilius Limetanus, tribune of the people, excited the plebeians to inquire into the conduct of thoſe perſons by whoſe aſſiſtance Jugurtha had eluded all the decrees of the ſenate. This occaſioned a great ferment, which produced a proſecution of the guilty ſenators, that was carried on for ſome time with the utmoſt zeal. Lucius Metellus the conſul, during theſe tranſactions, had Numidia aſſigned him for his province, and was appointed general of the army againſt Jugurtha. As he perfectly diſregarded wealth, the Numidian found him ſuperior to all his offers. To this he joined all the other virtues which conſtitute a great general; ſo that Jugurtha found him in all reſpects inacceſſible. He was therefore now forced to regulate his conduct according to the motions of Metellus with the greateſt caution; and to exert his utmoſt bravery. Metellus's lieutenant, being likewiſe a perſon of uncommon merit, the Romans reduced VACCA, a large opulent city, and the moſt celebrated mart in Numidia. They alſo defeated Jugurtha in a pitched battle; overthrew Bomilcar, one of his generals, upon the banks of the Muthullus; and, in fine, forced Jugurtha to take ſhelter in a place rendered almoſt inacceſſible by rocks and woods. However, Jugurtha exerted himſelf ſurpriſingly, exhibiting the courage, abilities, and attention of a conſummate general, to whom deſpair adminiſters freſh ſtrength, and ſuggeſts new lights. But his troops could not make head againſt the Romans; they were again worſted by Marius, though they obliged Metellus to raiſe the ſiege of Zama. Jugurtha therefore, finding his country everywhere ravaged, his moſt opulent cities plundered, his fortreſſes reduced, his towns burnt, vaſt numbers of his ſubjects put to the ſword and taken priſoners, began to think ſeriouſly of coming to an accommodation with the Romans. His favourite, Bomilcar, in whom he repoſed the higheſt confidence, but who had been gained over by Metellus, obſerving this diſpoſition, perſuaded him to deliver up his elephants, money, arms, horſes, and deſerters, into the hands of the Romans. Some of theſe laſt, to avoid puniſhment, retired to Bocchus king of Mauritania, and liſted in his ſervice. But Metellus ordering Jugurtha to repair to Tiſidium, a city of Numidia, and wait farther directions, and he refuſing, hoſtilities were renewed with greater fury than ever. Fortune now ſeemed to declare in favour of Jugurtha: he retook Vacca, and maſſacred all the Roman garriſon, except Turpilius the commandant. But ſoon after a Roman legion ſeized again upon it, and treated the inhabitants with the utmoſt ſeverity. About this time Gauda, a ſon of Maſtanabal, whom Micipſa in his will had appointed to ſucceed if his two legitimate ſons and Jugurtha died without iſſue, wrote to the ſenate in favour of Marius, who was then endeavouring to ſupplant Metellus. Gauda, having his underſtanding impaired, fell an eaſy prey to the adulation of Marius. The Roman, ſoothing his vanity, aſſured him, that as he was the next heir to the crown, he might depend upon being fixed upon the Numidian throne, as ſoon as Jugurtha was either killed or taken; and that this muſt ſoon happen, when once he appeared at the head of the Roman army with an unlimited commiſſion. Soon after, Bomilcar and Nabdalſa form-

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ed a design to assassinate Jugurtha, at the instigation of Metellus; but this being detected, Bomilcar and most of his accomplices suffered death. The plot however had such an effect upon Jugurtha, that he enjoyed afterwards no tranquillity. He suspected persons of all denominations, Numidians as well as foreigners, of some black designs against him: Perpetual terrors sat brooding over his mind; he often changed his bed, and his sleep was disturbed by a spirit of fear, jealousy, and distraction. Jugurtha having destroyed great numbers of his friends on suspicion of their having been concerned in the late conspiracy, and many more deserting to the Romans and Bocchus king of Mauritania, he found himself destitute of counsellors, generals, and all persons capable of assisting him in carrying on the war. This threw him into a deep melancholy, which rendered him dissatisfied with every thing, and made him fatigue his troops with a variety of contradictory motions. At last he was forced by Metellus to a battle. That part of the Numidian army which Jugurtha commanded, behaved with resolution; but the other fled at the first onset. The Romans therefore entirely defeated them, took all their standards, and made a few prisoners. A few were slain in the action, but the majority fled. Metellus pursued Jugurtha and his fugitives to THALA. His march being through vast deserts, was extremely tedious and difficult. But being supplied with water by the natives, who submitted to him, Metellus advanced towards that city; when a copious shower of rain, a phenomenon in those deserts, proved a seasonable refreshment to his troops. This so animated them, that upon their arrival before Thala, they attacked the town with such vigour, that Jugurtha, with his family, and treasures deposited therein, thought proper to abandon it. After a brave defence, it was reduced; the garrison, consisting of Roman deserters, setting fire to the king's palace, and consuming themselves with every thing valuable in the flames.

(10.) NUMIDIA, HISTORY OF, TO THE DELIVERING UP OF JUGURTHA TO SYLLA. Jugurtha, being now reduced to great extremities, retired into Gætulia, where he formed a considerable corps. From thence he advanced to the confines of Mauritania; and engaged Bocchus king of that country, who had married his daughter, to enter into an alliance with him. In consequence of which, having reinforced his Gætulian troops with a powerful body of Mauritanians, he turned the tables upon Metellus, and obliged him to keep close within his entrenchments. Sallust informs us, that Jugurtha bribed Bocchus's ministers to influence that prince in his favour; and that having obtained an audience, he insinuated, that, should Numidia be subdued, Mauritania must be involved in its ruin, especially as the Romans seemed to have vowed the destruction of all the thrones in the universe. Bocchus was also determined to assist Jugurtha against his enemies, by the slight the Romans had formerly shown him. That prince, at the first breaking out of the war, had sent ambassadors to Rome, to propose an offensive and defensive alliance to the republic; which, though of the utmost consequence to it at that juncture, a few of the most venal and infamous senators prevented from taking effect. This undoubtedly wrought more powerfuly upon Bocchus in favour of Jugurtha, than the relation he stood in to him. Such was the situation of affairs, when Metellus received advice of the promotion of Marius to the consulate. But, notwithstanding this injurious treatment, he generously endeavoured to draw off Bocchus from Jugurtha, though this would facilitate the reduction of Numidia for his rival. To this end ambassadors were dispatched to the Mauritanian court, who intimated to Bocchus, "That it would be highly imprudent to come to a rupture with the Romans, and that he had now a fine opportunity of concluding a most advantageous treaty with them," &c. To this Bocchus replied, "That there was nothing he wished for more than peace, but that he could not help pitying the deplorable condition of Jugurtha; that if the Romans, therefore, would grant that prince the same terms they had offered him, he would bring about an accommodation." Metellus let the Mauritanian monarch know, that it was not in his power to comply with what he desired. However, he took care to keep up a private negociation with him till Marius's arrival. By this conduct he served two ends; 1st, he prevented Bocchus from coming to a general action with his troops, as Jugurtha wished; and 2dly, this inaction enabled him to discover something of the genius and disposition of the Moors; a nation of whom the Romans had scarce formed any idea. Jugurtha, being informed that Marius, with a numerous army, was landed at Utica, advised Bocchus to retire, with part of the troops, to some place of difficult access, whilst he himself took post upon another inaccessible spot with the remaining corps. By this measure, he hoped the Romans would be obliged to divide their forces, and thus be more exposed to his attacks. However, he was disappointed, for Marius cut off great numbers of the Gætulian marauders, defeated many of Jugurtha's parties, and had almost taken that prince himself near Cirta. These advantages intimidated Bocchus, who now made overtures for an accommodation; but the Romans paid no attention to them. In the mean time Marius pushed on his conquests, reducing several places, and at last resolved to besiege Capsa. That this enterprise might be conducted with the greater secrecy, he suffered not the least hint of his design to transpire, not even among his officers. To blind them, he detached A. Manlius, one of his lieutenants, with some light armed cohorts, to the city of Lares, where he had fixed his principal magazine, and deposited the military chest. He then bent his march towards the Tanais, and in six days arrived upon its banks; where he pitched his tents to refresh his troops; after which he advanced to Capsa, and made himself master of it. As the situation of this city rendered it extremely commodious to Jugurtha, whose operations during the war, it had exceedingly favoured, he delivered it up to the soldiers to be plundered and levelled with the ground. The citizens, being more strongly attached to that prince than any of the other Numidians, and of course bearing a more implacable hatred to the Romans, he put to the sword or sold

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ſold for ſlaves. The Numidians, ever after this exploit, dreaded the very name of Marius; who now, in his own opinion, had eclipſed the glory of all his predeceſſor's great achievements, particularly the reduction of Thala, a city, in ſtrength and ſituation, nearly reſembling Capſa. Moſt of the places of ſtrength in Numidia either opened their gates, or were abandoned at his approach, being terrified with what had happened to Capſa, Others, taken by ſtorm, he laid in aſhes; and in ſhort, filled the moſt part of Numidia with blood, horror, and confuſion. Then, after an obſtinate defence, he reduced a caſtle that ſeemed impregnable, ſeated near Mulucha, where Jugurtha kept part of his treaſures. In the mean time, Jugurtha not being able to prevail upon Bocchus to advance into Numidia, was obliged to have recourſe to his uſual method of bribing the Mauritanian miniſters. He alſo promiſed him a 3d part of his kingdom, provided they could either drive the Romans out of Africa, or get all the Numidian dominions confirmed to him by treaty. So conſiderable a ceſſion prevailed on Bocchus to ſupport Jugurtha with his whole power. The two African monarchs having joined their forces, ſurpriſed Marius near Cirta as he was going into winter quarters. The Roman general was ſo puſhed on this occaſion, that the barbarians thought themſelves certain of victory; but their incaution enabled Marius to give them a defeat; which was followed 4 days after by ſo complete an overthrow, that their numerous army, conſiſting of 90,000 men, by the acceſſion of a corps of Moors, under Bocchus's ſon, Volux, was entirely ruined. Sylla, Marius's lieutenant, moſt eminently diſtinguiſhed himſelf in the laſt action, which laid the foundation of his greatneſs. Bocchus, now looking upon Jugurtha's condition as deſperate, and not being willing to run the riſk of loſing his dominions, ſhowed a diſpoſition to clap up a peace with Rome. However, the Romans told him, that he could not be ranked amongſt their friends, till he had delivered up Jugurtha, their inveterate enemy. Bocchus having entertained an high idea of an alliance with Rome, reſolved to ſecure it; and was confirmed in his reſolution by Dabar, a Numidian prince, the ſon of Maſſugrada, and deſcended by his mother from Maſiniſſa. Being cloſely attached to the Romans, and extremely agreeable to Bocchus, he defeated all the intrigues of Aſpar, Jugurtha's miniſter. Upon Sylla's arrival at the Mauritanian court, the affair there ſeemed to be entirely ſettled. However, Bocchus, who was in the higheſt degree perfidious, debated within himſelf, whether he ſhould ſacrifice Sylla or Jugurtha, who were both then in his power. The ſudden changes in his countenance, his air, and his whole perſon, ſhowed how ſtrongly his mind was agitated. But at laſt he delivered up Jugurtha to Sylla, to be conducted to Marius; who, by that ſucceſsful event, happily terminated this dangerous war. (See JUGURTHA.)

(11.) NUMIDIA, HISTORY OF, TO THE TOTAL CONQUEST OF IT BY THE ROMANS. The kingdom of Numidia was now reduced to a new form: Bocchus, for his important ſervices, had the country of the Maſæſyli contiguous to Mauritania, aſſigned him; which, from this time, took the name of *New Mauritania*. Numidia Propria, or the country of the Maſſyli, was divided into three parts; one of which was given to Hiempſal, another to Mandreſtal, both deſcendants of Maſiniſſa; and the third the Romans annexed to Africa Propria, or the Roman Province adjacent to it. Jugurtha's two ſons ſurvived him, but ſpent their lives in captivity at Venuſia. However, one of them named OXYNTAS, was releaſed from his confinement by Aponius who beſieged Acerræ in the war between the Romans and the Italian allies, and brought him to his army, where he treated him as king, ſo draw the Numidian forces off from the Roman ſervice. Accordingly thoſe Numidians no ſooner heard that the ſon of their king was fighting for the allies, than they began to deſert by companies; which obliged Julius Cæſar to ſend all his Numidian cavalry back into Africa. A few years after this event, Pompey defeated Cneius Domitius Ahenobarbus, and Hiarbas one of the kings of Numidia, killing 17,000 of their men upon the ſpot; purſued the fugitives to their camp, which he ſoon forced, put Domitius to the ſword, and took Hiarbas priſoner. He then reduced that part of Numidia which belonged to Hiarbas, who had ſucceeded Mandreſtal, and gave it to Hiempſal, a Numidian prince, deſcended from Maſiniſſa, who had always oppoſed the Marian faction. Suetonius informs us, that a diſpute happened between Hiempſal and one Maſintha, a noble Numidian, when Julius Cæſar firſt began to make a figure in the world; that Cæſar warmly eſpouſed the cauſe of Maſintha, and groſsly inſulted Juba, Hiempſal's ſon, when he attempted to vindicate his father's conduct on this occaſion. He pulled him by the beard, than which a more unpardonable affront could not be offered to an African. In ſhort, he ſcreened Maſintha from the inſults and violence of his enemies; which was the reaſon of Juba's adhering ſo cloſely afterwards to the Pompeian faction. In conſequence of this indignity, Juba did Cæſar great damage in the civil wars betwixt him and Pompey. By a ſtratagem he drew Curio, one of his lieutenants, into a general action, which it was his intereſt to have avoided. He cauſed it to be given out all over Africa Propria and Numidia, that he was retired into ſome remote country at a great diſtance from the Roman territories. This coming to Curio's ears, who was then beſieging Utica, it prevented him from taking precautions againſt a ſurpriſe. Soon after, Curio hearing that a ſmall body of Numidians was approaching his camp, he put himſelf at the head of his forces to attack them, and left they ſhould eſcape, began his march in the night. Some of their advanced poſts he found aſleep, and cut them to pieces; which ſtill farther animated him. In ſhort, about day-break he came up with the Numidians, whom he attacked with great bravery, though his men were then faſting, and vaſtly fatigued by their forced march. In the meantime, Juba, who, had marched privately with the main body of his army, advanced to the relief of his men. The Romans had met with great reſiſtance before he appeared; ſo that he eaſily broke them, killed Curio, with a great part of his troops, upon the ſpot, purſued the reſt to their camp, which he

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plundered, and took many of them prisoners. Most of the fugitives, who endeavoured to make their escape on board the ships in the port of Utica, were either slain by the pursuers, or drowned. The remainder fell into the hands of Varus, who would have saved them; but Juba, who claimed the honour of the victory, ordered most of them to be put to the sword. This victory infused new vigour into the Pompeian faction, who conferred great honours upon Juba, and gave him the title of *king of all Numidia*. But Cæsar and his adherents declared him an enemy to Rome, adjudging to Bocchus and Bogud, the sovereignty of his dominions. Juba afterwards uniting his forces with those of Scipio, reduced Cæsar to great extremities, and would in all probability have totally ruined him, had he not been relieved by Publius Sittius. That general, having formed a considerable corps, consisting of Roman exiles, and Mauritanian troops sent him by Bocchus, according to Dio, or, as Cæsar has it, by Bogud, made an irruption into Gætulia and Numidia, whilst Juba was in Africa Propria. As he ravaged those countries in a dreadful manner, Juba immediately returned with the best part of his army, to preserve them from utter destruction. Cæsar knowing his horse to be afraid of the enemy's elephants, did not attack Scipio in the absence of the Numidian, till his own elephants, and a fresh reinforcement of troops arrived from Italy. In the mean time Scipio dispatched reiterated expresses to Juba to hasten to his assistance; but could not prevail upon him to move out of Numidia, till he had promised him all the Roman dominions in Africa, on the expulsion of Cæsar. Upon this, having sent a large detachment against Sittius, he marched with the rest of his troops to assist Scipio. However Cæsar overthrew Scipio, Juba, and Labienus, near the town of THAPSUS, and forced all their camps. As Scipio was the first surprised and defeated, Juba fled into Numidia, without waiting for Cæsar's approach; but the Numidians sent against Sittius, having been dispersed by that general, none of his subjects there would receive him. He therefore, in despair, sought death in a single combat with Petreius, and, having killed him, caused himself to be dispatched by one of his slaves. After this decisive action, and the reduction of Africa Propria, Cæsar made himself master of Numidia, which he reduced to a Roman province, appointing Crispus Sallustius to govern it in quality of proconsul, with private instructions to plunder the inhabitants, and thus put it out of their power to shake off the Roman yoke. However, Bocchus and Bogud still preserved a sort of sovereignty in the country of the Massæsyli and Mauritania. The former, having deserted Cæsar, sent an army into Spain to assist the Pompeians; and the latter, with his forces, determined the victory in favour of Cæsar at the battle of MUNDA. Bogud, afterwards siding with Antony against Octavius, sent a body of forces to assist him in Spain; when the Tingitanians revolting from him, Bocchus, with an army composed of Romans in the interest of Octavius, who passed over from Spain into Africa, and his own subjects, possessed himself of Mauritania Tingitana. Bogud fled to Antony; and Octavius, after the conclusion of the war, honoured the inhabitants of Tingi with all the privileges of Roman citizens. He likewise confirmed Bocchus king of Mauritania Cæsariensis, or the country of the Massæsyli, in the possession of Tingitania, which he had conquered, as a reward for his important services. In this he imitated the example of Julius Cæsar, who divided some of the fruitful plains of Numidia among the soldiers of P. Sittius, who had conquered great part of that country, and appointed Sittius himself sovereign of that district. Sittius, merited this reward, having taken Cirta, killed Sabura, Juba's general, entirely dispersed his forces, and either cut off or taken prisoners most of the Pompeian fugitives that escaped from the battle of Thapsus. After Bocchus's death, Mauritania and the Massæsylian Numidia were in all respects considered as Roman provinces.

(12.) NUMIDIA, PROPRIA. See § 2.

NUMIDIAN, *adj.* Of or from Numidia.

NUMIDIANS, *n. f.* the people of NUMIDIA.

NUMISMATIC, *adj.* [from *numisma*, Lat. a piece of money.] Of or belonging to money, coins or medals.

NUMISMATOGRAPHY.

DEFINITION.

NUMISMATOGRAPHY. *n. f.* [*Numismatographia*, Lat. from *numisma*, a piece of money, and γραφω, Gr. to describe.] literally signifies a description of money; and is the proper name of that science which teaches the knowledge and description of ancient COINS and MEDALS, whether of gold, silver, copper, or brass.

SECT. I. *Of the* UTILITY *of* NUMISMATOGRAPHY *in* HISTORY *and* OTHER SCIENCES.

THERE are few studies of more importance to history than that of medals; the sole evidence we can have of the veracity of an historian being only such collateral documents as are evident to every body, and cannot be falsified. In modern times, these are found in public memoirs, instructions to ambassadors, and state papers of various kinds. Such memorials, however, are subject to various accidents, and besides, commonly remain in the countries where they are first published, and cannot therefore give to the world at large that perfect and entire satisfaction which ought to be derived from genuine history; so that more durable and widely diffused monuments are still to be wished for. Such are public buildings, inscriptions, and statues; but these, excepting a few instances of the two last, are always confined to particular countries; so that medals alone remain

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main as infallible documents of truth, capable of being diffused over all countries in the world, and of remaining through the lateſt ages.

Coins and medals are uſeful in other ſciences beſides hiſtory. In geography, we find the ſituation of towns determined by their vicinity to ſome noted river, mountain, &c. Thus, ΜΑΓΝΗΤΩΝ ΣΙΠΥΛΟΥ ſhows that Magneſia was ſituated under Mount Sipylus. In like manner, it is ſhown from a medal, that Epheſus ſtood on the river Cayſter; and there is extant a medal, bearing an inſcription, which ſignifies Alexandria on the Scamander; a name given to Troy by Alexander the Great. The reverſe has upon it the famous Apollo Smintheus of Homer. In natural hiſtory, alſo, medals are uſeful chiefly from the coins ſtruck on the celebration of the ſecular games, in which the figures of various animals are preſerved; and thus it may very often be determined whether any animal be known to the ancients or not. On many of the Greek medals are ſeveral uncommon plants and animals. Thus, on moſt of the medals of Cyrene, is the figure of the celebrated *Sylphium*; and on thoſe of Tyre, the ſhell-fiſh from which the famous Tyrian purple was procured. By means of medals, alſo, the exact delineations of many noble edifices are preſerved, though not even a veſtige of their ruins be now exiſting; ſo that the uſes of them to the architect are very conſiderable. To the connoiſſeur they are abſolutely neceſſary; becauſe by them alone he is enabled to aſcribe ancient buſts and ſtatues to their proper perſons, with multitudes of other points of knowledge which cannot be otherwiſe determined. The elucidations of obſcure paſſages in ancient authors, by means of medals, are alſo numerous and well known.

SECT. II. HISTORY *of* NUMISMATOGRAPHY.

THIS ſtudy is not of very ancient date: None of the claſſic writers give any account of collections of medals. We know that many of the coins of the Greeks were of excellent workmanſhip, and that they were admired and imitated by the Romans; but we do not find that they were made any ſcientific uſe of by either.

The firſt among the moderns who began to ſtudy Numiſmatography, was PETRARCH. Being deſired by the emperor Charles IV. to compoſe a book containing the lives of eminent men, and to place him in the liſt, he replied, that he would do ſo whenever the emperor's life and conduct deſerved it. In conſequence of this converſation, he afterwards ſent the emperor a collection of gold and ſilver coins bearing the repreſentations of eminent men, with an addreſs ſuitable to his former declaration. A collection of coins was made in the next age by Alphonſo king of Arragon; but though this monarch collected all that could be found throughout Italy, there could not have been very many, as the whole were contained in an ivory cabinet, and carried always about with him. A very conſiderable collection was made by Anthony Cardinal St Mark, nephew to Eugene IV. who was pope in 1431; and ſoon after the grand muſeum at Florence was begun by Coſmo de Medicis, where a collection of ancient coins and medals had a place among other curioſities. Matthias Corvinus, king of Hungary, about the ſame time formed a noble collection of coins, along with ancient MSS. and other valuable relics of antiquity.

Mr PINKERTON conſiders *Agnolo Poliziano*, or ANGELUS POLITIANUS, as the firſt writer who adduced medals as vouchers of ancient orthography and cuſtoms. He cites different coins of the Mediceau collection in his Miſcellanea, written about 1490. By means of a cabinet of medals collected by Maximilian I. emperor of Germany, John Huttichius was enabled to publiſh a book of the lives of the emperors, enriched with their portraits, delineated from ancient coins. It is generally ſuppoſed that this book, which appeared in 1525, was the firſt work of the kind; but Labbe, in his *Bibliotheca Nummaria*, mentions another named *Illuſtrium Imagines*, by one Andrew Fulvius, printed in 1517, in which moſt of the portraits ſeem to be from medals. About 1512 alſo, William Bude, a French author, had written his treatiſe *De Aſſe*, though it was not printed till many years afterwards. M. Grollier, treaſurer of the French armies in Italy, during part of the 16th century, had a great collection of coins of different kinds of metals. After his death, his braſs medals were ſent to Provence, and were to have been ſent into Italy; when the king of France, having got information of the tranſaction, gave orders to ſtop them, and purchaſed the whole at a very high price for his own cabinet of antiquities. M. Grollier had an aſſortment of gold and ſilver, as well as of braſs medals: the cabinet in which they were contained fell two centuries afterwards into the hands of the Abbe de Bothelin; and was known to have been that of Grollier, from ſome ſlips of paper, on which was his uſual inſcription for his books.

Contemporary with Grollier was William de Choul, who was likewiſe a man of rank and fortune. He had a good collection of medals, and publiſhed many in his *Treatiſe on the Religion of the ancient Romans*, in 1557. In the Netherlands, we know, from the letters of Eraſmus, that the ſtudy of medals was begun about the beginning of the 16th century. About the middle of that century, Hubert Goltzius, a printer and engraver, travelled over moſt countries in Europe, ſearching for coins and medals, to publiſh books concerning them. From one of theſe works it appears, that there were then in the Netherlands 290 cabinets of medals; 175 in Germany; upwards of 380 in Italy; and 200 in France. It is probable, however, that there are now four times as many in theſe countries, beſides 500 in Britain; but we are not to imagine that all theſe were grand collections, for of ſuch there are not above a dozen even in Italy: moſt of thoſe juſt mentioned were of the claſs named *caſkets* of medals, containing from 100 to 1000 or 2000.

There are few countries, Italy excepted, in which a greater number of coins have been found than in Britain; though we are by no means well acquainted with the time when the ſtudy of them commenced. Mr Pinkerton ſuſpects that CAMDEN was one of the firſt, if not the very firſt Britiſh author, who publiſhed medals in his works, and who muſt have had a ſmall collection. Speed's Chronicle,

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Chronicle, publiſhed in the 17th century, was illuſtrated with coins from Sir Robert Cotton's cabinet. Gorlæus's collection was purchaſed by Henry prince of Wales, brother to Charles I. to whom he left it at his death. According to Joſeph Scaliger, it conſiſted of 30,000 coins and medals. A collection of 5500 coins was purchaſed by Abp. Laud for 600l. and given to the Bodleian library. Thomas earl of Arundel, earl-marſhal of England, well known from the Arundelian tables and other antiquities which he imported from Greece and Italy into Britain, had a rich cabinet of medals collected by Daniel Niſum. The dukes of Buckingham and Hamilton, Sir William Paſton, Sir Thomas Fanſhaw of Ware-park, Sir Thomas Hanmer, Ralph Sheldon, Eſq. Mr Selden, &c. are enumerated by Evelyn as collectors of medals. Charles I. as well as his hiſtorian the earl of Clarendon, were alſo collectors. The king had a very fine cabinet, which, however, was diſſipated and loſt during the civil commotions. Oliver Cromwell had a ſmall collection; and the cabinet of Charles II. is mentioned by Vaillant in the preface to his treatiſe, entitled, *Nummi in Coloniis*, &c. This branch of magnificence has not been much attended to by ſucceeding Britiſh monarchs; though his preſent majeſty has a very good collection of ancient gold coins.

A great number of fine cabinets have been formed in Britain ſince the time of Evelyn. About 1720, Haym mentions thoſe of the duke of Devonſhire, the earls of Pembroke and Winchelſea, Sir Hans Sloane, Sir Andrew Fontaine, Mr Sadler, Mr Abdy, Mr Wren, Mr Chicheley, and Mr Kemp. At preſent there are many remarkable collections; but that of the late Dr Hunter is deſervedly eſteemed the moſt remarkable in Europe, excepting that of the late French king. It was not only formed at a great expenſe, but with much care and ability; many foreign medals offered to it having been rejected. The other remarkable collections are thoſe of the duke of Devonſhire, the earl of Pembroke, earl Fitzwilliam, formerly the marquis of Rockingham's, Horace Walpole, the Rev. Mr Crachrode, the Rev. Mr Southgate, Mr Townley, Mr R. P. Knight, Mr Edward Knight, Mr Tyſon, Mr Barker, Mr Brown, and ſeveral others. The muſeum and Engliſh univerſities have alſo collections; as well as the advocates library and univerſities of Scotland.

SECT. III. *Of the* MATERIALS *of which* COINS *and* MEDALS *are* CONSTRUCTED.

COINS and medals are formed of gold, ſilver, and various modifications of copper. The gold uſually made uſe of in coinage is about the fineneſs of 22 carats; but the moſt ancient medals are more impure than the modern coins. Many of them are compoſed of a mixture of gold and ſilver, called by the ancients *electrum*. The gold medals were made of much finer metal after Philip I. of Macedon became poſſeſſed of the gold mines of Philippi in Thrace; and thoſe of his ſon Alexander the Great are equally fine; as well as thoſe of ſome other princes of that age. Thoſe of the Egyptian Ptolemies are of the fineneſs of 23 carats three grains, with only one grain of alloy. The Roman coins are very pure, even from the earlieſt times. Some are of opinion, that the Roman coins begin to fall ſhort of their purity after the time of Titus; but Mr Pinkerton denies that this takes place till the time of Severus; and even then only in a few inſtances. Moſt of the Roman gold was brought from Dalmatia and Dacia.

BODIN tells us, that the goldſmiths of Paris, upon melting one of VESPASIAN's gold coins, found only $\frac{1}{144}$ part of alloy.

Moſt of the ancient ſilver, particularly that of Greece, is leſs pure than that of ſucceeding times; even the Roman ſilver is rather inferior to the preſent ſtandard; but in the time of Severus, the ſilver appears very bad, and continues ſo until the time of Dioclefian. Many writers upon this ſubject have miſtaken the *denariiærei*, "coins of braſs waſhed with ſilver," for ſilver currency. Silver coins are extremely ſcarce from the time of Claudius II. to that of Dioclefian, or from A. D. 270 to 284; in which ſhort ſpace no fewer than eight emperors reigned. Silver at that time was found moſtly in Spain; and ſuch were the troubles of the times, that both the ſilver and gold coins of thoſe eight emperors are extremely ſcarce. There is ſtill, however, ſome ſilver extant of theſe eight emperors. Occaſional depravations of ſilver had taken place long before; as Pliny tells us, that Mark Antony mixed iron with his ſilver denarii; and Mr Pinkerton informs us, that he had ſeen a denarius of Antony which was attracted by a magnet.

The ancient braſs coins are of two kinds: the red or Cyprian, which indeed is no other than copper; and the common yellow braſs. Our author obſerves, that in the Roman coinage, braſs was of double the value of copper; and he is of opinion, that it was the ſame among the Greeks; and the latter is the metal moſt commonly made uſe of in the Greek coinage. The Roman ſeſtertii are always of braſs; the middling-ſized kind are partly copper and partly braſs; the former being double the value of the latter, which are the *aſſes*.

Mr PINKERTON next gives an account of the mixed metals uſed among the Romans. In Britain, all kinds of coins made of mixed metal are without heſitation alleged to be forgeries; although it is certain that the variety of mixed metals uſed in coinage was very conſiderable. The moſt valuable mixture was that of gold and ſilver, named *electrum*; the ſilver commonly amounting to one 5th part of the gold made uſe of, or perhaps more. Of this mixture are many of the early coins of Lydia, and ſome other Aſiatic ſtates; alſo thoſe of the kings of the Cimmerian Boſphorus, during the imperial ages of Rome. Next to the electrum were the coins of Corinthian braſs: but Mr Pinkerton ſays, that not a ſingle coin was ever ſtruck of this metal by the ancients; it having been conſtantly employed only in the fabrication of vaſes or toys. It was in uſe at any rate only for a very ſhort time; being altogether unknown in the days of Pliny the Elder. Mr Pinkerton therefore ridicules thoſe who pretend not only to find out imperial coins of this metal, but to diſcover three kinds of it; viz. one in which the

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the gold predominates, another in which the silver prevails, and a third where the brass is most conspicuous. He gives ÆNEAS VICO, one of the most ancient writers on medals, as the author of this idea; but whose opinions were confuted by one Savot, a writer in the 17th century. Vico mentions a coin of this kind struck under Augustus, another of Livia, and a third of Claudius. The mistake, he is of opinion, arose from the circumstance of the first propagator not being able to account for the various mixtures and modifications of brass observable in ancient coins of the large size; and which in so common a metal appear very odd to the moderns. Besides the authority of Pliny and other antiquaries of more modern date, who all declare that they never saw a single medal of Corinthian brass, or of that metal mixed with silver and gold, our author adduces another evidence which he looks upon to be superior to either, *viz.* that those, who have given into this supposition, imagine, that the large pieces called *sestertii*, and others called *dupondiarii*, worth about twopence or a penny, are said to have been composed of this precious metal. It is unreasonable to think, that any proportion of gold or silver could have been made use of in these. The coins said to have been struck upon Corinthian brass are only done upon a modification of common brass; of which we know, that in proportion to the quantity of zinc made use of in conjunction with the copper, the metal assumes a variety of hues. On the authority of Pliny he informs us, that the coins mistaken for Corinthian brass were no other than prince's metal.

The Egyptian silver coins struck under the Roman emperors are at first of tolerably pure silver; but afterwards degenerate into a mixture of copper and tin with a little silver. They are very thick, but many of them are elegantly struck, with uncommon reverses. There are likewise three sets of brass coins belonging to this country from the earliest times of the Roman emperors there. Some of these are of bell-metal or pot-metal; and after the time of Gallienus and Valerian, the coinage of brass with a small addition of silver becomes authorised by the state; the coins struck upon it being called *denariiærei*. Those of lead or copper plated with silver have been fabricated by Roman forgers. Some coins of lead, however, have been met with of undoubted antiquity: and an ancient writer informs us, that tin money was coined by Dionysius; but none has been found. The lead coins of Tigranes king of Armenia, mentioned as genuine by Jobert, are accounted forgeries by Mr Pinkerton and other modern medallists. Plautus, however, makes mention of leaden coins, and several of them have been found; but our author looks upon them to have been chiefly essay pieces, struck in order to let the artist judge of the progress of the dye. Others are the plated kind already mentioned, fabricated by ancient forgers, but having the plating worn of. A great number of leaden coins are mentioned by Ficorini in a work entitled *Piombi Antichi*, in which he supposes them to have served as tickets for guests; and coins of the same kind are also mentioned by Passeri. In the *Notitia Imperii Romani*, there is mention of coins made of leather, but none of them have ever been found.

SECT. IV. *Of* ANCIENT MONEY.

COINAGE, according to Herodotus, was first invented by the Lydians, from whom the Greeks quickly received it. The former could not have received it from the Persians, whose empire did not begin till 570 B. C. though it might have proceeded from the Syrians, who carried on commerce in very ancient times. The most ancient Greek coins of silver have an indented mark upon one side, and a tortoise upon the other; and those of greatest antiquity have no letters upon them. Those of latter date have AITI marked upon them, which has been interpreted of Ægium in Achaia; but which is more probably a contraction of Ægina, the mint of which was much celebrated.

The general denomination of the Greek money is the drachma, or 8th part of an ounce; which to this day is retained in the medical weights, the Grecian coins receiving their names from the weights they bore; though in some instances the weights received their appellations from the coins. The silver drachma, according to Mr Pinkerton, was about nine pence sterling; and he finds fault with those who make the drachma and denarius both equal to one another, the latter being no more than eight-pence. The didrachm of silver, according to the same calculation, was worth 18d.; but the *tridrachm* occurs very rarely: and Mr Pinkerton is even of opinion, that medallists give this name to the didrachm of Ægina. The largest of all the Grecian coins is the tetradrachm, which on the Æginean standard is worth five shillings; but in those of the other states only four. There are, however, many subdivisions in the silver drachma; the highest being the *tetraobolion* or coin of four oboli; being in proportion to the drachma as our groat to a sixpence, weighing about 44 grains, and being in value about six-pence. The hemidrachm or triobolion comes next in value, weighing about 33 grains, and worth fourpence half-penny. The silver diobolin, or third of the drachma weighs about 22 grains, and is worth three pence. The obolus of silver weighs about 11 grains, and is worth only three halfpence. There is likewise a hemiobolion in silver, or half the obolus, of five grains and an half, value three farthings: and another called *tetraptobolion dichalos* or quarter obolus, which is the most minute coin yet met with; and by reason of its extreme smallness, weighing only two grains and a quarter, is now very scarce: but there is one in the cabinet of Dr Hunter, and some more have been lately brought from Athens by Mr Stewart. Some of them are likewise met with at Tarentum. It would appear, however, that there were some still smaller, and of value only three-fourths of a farthing. None of these have been met with; and the smallness of the size renders it improbable that any will ever be met with: as the peasants, who commonly discover coins, would probably either not observe them at all, or if they did, would neglect them as things of no value.

Many different names have been imposed on the coins belonging to the different states of Greece;

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Greece: thus Κορη, *the maiden*, was a name often applied to the tetradrachm, and which would ſeem to apply to thoſe of Athens; though there are coins of other cities with the head of Proſerpine, and the word Κορη, to which it would appear more applicable in our author's opinion. Χελωνη, *the ſhell*, was the name of another coin from its type. A Sicilian coin was named Δημαρετιον, from Gelon's wife. A tetradrachm was named Κρατηταγους, and had eight ωβολοι or hemidrams. The τροιζηνιον, ſo called from its country Troizene, had Pallas on one ſide and a trident on the reverſe. The hemiobolion was the Πελανος of Lacedemon; and the Κολλυβος is ſuppoſed to have been equal to the Roman ſeſtertius or quarter drachma. The *cyſtophori* were coins with the myſtic cheſt or hamper of Bacchus upon them, out of which a ſerpent riſes; and are much celebrated in antiquity. The moſt probable opinion concerning them ſeems to be, that they are all ſilver tetradrachms; ſuch as belong to the cities of Apamea and Laodicea in Phrygia; Pergamus in Myſia; Sardes and Tralles in Lydia; and Epheſus.

Another ſet of coins famous in antiquity were thoſe of Cyzicus in Myſia, which were of gold; but they are now almoſt entirely vaniſhed by being recoined in other forms. The Αρταβδικον νομισμα, or *money of Aryandes*, who was made governor of Egypt by Cambyſes, is mentioned by Heſychius; but none of them have reached our times. They muſt have been marked with Perſian characters, if with any. The coin of Queen *Philiſtis* is mentioned by the ſame writer, and many of theſe pieces are ſtill extant; but we know not where this queen reigned, nor does there ſeem to be any method of finding it out. The moſt particular attention with regard to the names and ſtandard of coins is due to thoſe of Athens; and it is remarkable that moſt of them which have reached us are of a very late period, with the names of magiſtrates inſcribed upon them. Some of theſe bear the name of Mithridates; and few are older than the era of that prince; who, it is well known took the city of Athens in his war with the Romans. I ſuſpect (ſays Mr Pinkerton) that no Athenian coins of ſilver are poſterior to Sylla's infamous deſtruction of that city: an event the more remarkable, as Salluſt tells us, that Sylla was learned in Greek. It is ſtill more remarkable, that the fabric of Athenian coins is almoſt univerſally very rude: a ſingular circumſtance if we reflect how much the arts flouriſhed there. It can only be accounted for from the excellence of their artiſts being ſuch as to occaſion all the good ones to be called into other countries, and none but the bad left at home. In like manner, the coins ſtruck at Rome in the imperial times are excellent, as being done by the beſt Greek artiſts; while thoſe of Greece, though famous at that time for producing miraculous artiſts, are during that period commonly of very mean execution.

The copper money of the Greeks is next in antiquity to the ſilver. Mr Pinkerton is of opinion, that it was not uſed at Athens till the 26th year of the Peloponneſian war: about A. A. C. 404, and 300 after ſilver was firſt coined there. The firſt copper coins were thoſe of Gelo of Syracuſe, about 490 B. C.

The whole braſs coins of Athens publiſhed by Dr Combe are reducible to four ſizes, which may be the *lepton*, *dilepton*, *tetralepton* or *hemichalcos* and *chalcos*. The firſt is not above the ſize of one of king James I.'s farthing tokens; the laſt about that of our common farthing. The *lepta* was alſo called Κερμα, as being change for the poor. The Κιδαβος, perhaps ſo called from the figure of a wolf upon it, was the coin of a particular ſtate, and if of braſs muſt have weighed three chalci. The other names of the copper coins of Greece are but little known. Lycurgus ordered iron money to be coined at Sparta; but ſo periſhable is this metal, that none of that kind of money has reached our times.

After the conqueſt of Greece by the Romans, moſt of the coins of that country diminiſhed very much in their value, the gold coinage being totally diſcontinued: though ſome of the barbarous kings who uſed the Greek character were permitted to coin gold, but they uſed the Roman model; and the ſtandard uſed by the few cities in Aſia who ſpoke the Greek language in the times of the emperors is entirely unknown. Copper ſeems to have been the only metal coined at that time by the Greeks themſelves; and that upon the Roman ſtandard, then univerſal through the empire, that there might be no impediment to the circulation of currency. They retained, however, ſome of their own terms, uſing them along with thoſe of the Romans. The *aſſarion* or *aſſarium* of Rome, the name of the diminiſhed *as*, being 16 to the drachma or denarius; the obolus was ſo much diminiſhed in value as to be ſtruck in braſs not much larger than the old chalcus, and valued at between two and three aſſaria; which was indeed its ancient rate as to the drachma. This appears from the copper coins of Chios, which have their names marked upon them. The braſs obolus, at firſt equal in ſize to the Roman ſeſtertius or large braſs, leſſens by degrees to about the ſize of a ſilver drachma. From the badneſs of the imperial coinage in Greece alſo, it appears that braſs was very ſcarce in that country, as well as in all the cities uſing the Greek characters, being found moſtly in the weſtern countries of the Roman empire. The time of this declenſion in ſize of the Greek coins is by Mr Pinkerton ſuppoſed to have been from Auguſtus down to Gallienus. He is of opinion, however, that the copper obolus, at firſt above the ſize of large braſs, was uſed in Greece about the time of its firſt ſubjection to Rome; and that the lepta ceaſing, the chalci came in their room, with the dichalcus and the hemiobolion of braſs.

With reſpect to the gold coins of the Greeks, none of that metal was coined before the time of Philip of Macedon, as none have reached our times prior to the reign of that monarch.

Notwithſtanding, however, this deficiency of gold coin among the Greeks, it is certain that the coinage of gold had taken place in Sicily long before; as we have gold coins of Gelo about 491 B. C. of Hiero I. 478, and of Dionyſius I. in 403, all uſing the Greek characters; though not to be ranked among the gold coins of Greece, as Philip cauſed his to be. Gold coins of Syracuſe even

appear

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appear of the third claſs of antiquity, or with an indented ſquare, and a ſmall figure in one of its ſegments. Gold coins were uſed in the cities of Brettium, Tarentum, and throughout Magna Græcia: alſo in Panticapæa in Thrace, and likewiſe in Coſa in that country; but not in Tuſcany, as is commonly believed, though Neumann proves that they were ſtruck by Brutus, and are unqueſtionably as ancient as the Greek coins. The Thebans and Athenians probably coined the firſt gold after Philip had ſet them the example, and when they were attempting to reſiſt the projects of that enterpriſing monarch. The Ætolians probably coined their gold during the time of their greateſt power, about a century after Philip, and when they were combating the power of Aratus and the Achæan league. "There is (ſays Mr Pinkerton) but one ημιχρυσον of Thebes, much worn, in Dr Hunter's cabinet, and weighing but 59 grains; and perhaps not above two or three χρυσοι or gold didrachms of Athens in the world; one of which is alſo in the collection of Dr Hunter, and weighs 132½ grains. It appears to be more modern than the reign of Philip. That monarch having got poſſeſſion of the mines of Philippi in Thrace, improved them ſo much, that they produced him annually above a thouſand talents of gold, or 2,880,000l. of our money. From this gold the firſt coins named from the monarch *Philippi* were ſtruck. They were marked with his portrait; and for many ages after were ſo numerous, that they were common in the Roman empire; whence the name *Philippi* became at length common to gold, ſilver, and at laſt even braſs coins of their ſize. Even in the time of Philip gold was very ſcarce in Greece; but after the Phocians had plundered the temple of Delphos, this precious metal, which had been valued as gems, and conſecrated only to the decoration of the temples of the gods, began to be known among the Greeks. The comparative values of gold and ſilver, however, ſeem to have been at that time very different from what they are now. Herodotus values gold at 13 times its weight in ſilver; Plato in his Hipparchus at 12; and even the low value of 10 to 1 ſeems to have been the ſtated value in Greece, though in Rome the plenty of ſilver from the Spaniſh mines made the value of gold to be much higher; and there is no reaſon to think that it was ever valued in that city at leſs than 12 times its weight in ſilver. The *Philippus*, χρυσος, gold piece, or *ſtater*, is a didrachm, and is the moſt common of all the ancient coins. Mr Pinkerton is of opinion that it went for 20 ſilver drachms on its firſt appearance; but in later times for 25 Greek drachmæ or Roman denarii. There are proofs of the Philippi being didrachms, both from the writings of ancient authors and from numbers of the coins themſelves, which remain to this day; and that the χρυσος, or principal gold coin of Greece, was of the ſame weight, is alſo evident from ancient writings. It was anciently worth about 15s. but valuing gold now at the medium price of 4l. per ounce, it is worth about 20s. The ημιχρυσος, or half the former coin, ſcarcely occurs of the coinage of Philip and Alexander, though it does of Hiero I. of Syracuſe, and of king Pyrrhus. It paſſed for ten ſilver drachms, and was valued only at 7s. 6d. though now worth 10s. There was another diviſion of this kind worth about 5s. There were beſides ſome leſſer diviſions of gold coins, which could not be worth above two drachms. Theſe were coined in Cyrene; and there were beſides ſeveral old gold coins of Aſia Minor, the value of which is now unknown. Our author ſuppoſes that they were coined, not with relation to their weight as parts of the drachma, but merely to make them correſpond with ſo many ſilver pieces as was neceſſary. There are alſo larger coins than the χρυσος, the δι χρυσος of Alexander and Lyſimachus being double its value. Some others are met with of Lyſimachus, Antiochus III. and ſome of the Egyptian monarchs, weighing four times the χρυσος, and now worth about 4l. ſterling. Some weigh even more; but this our author ſuppoſes owing to the gold being leſs pure.

In Rome, as well as in Greece, the money was at firſt eſtimated by weight; and the firſt metal coined by that people was copper, ſilver being long unknown in Rome; nor is it certainly known that any ſilver has ever been found in the Italian mines. In Rome the firſt valuation of money was by the *libra gravis æris*, or pound of heavy braſs; and in the progreſs of their conqueſts, the little ſilver and gold that came in their way was regulated by the ſame ſtandard, as appears from the ſtory of Brennus. The weights made uſe of were the ſame with thoſe which continue to this day. The pound conſiſted of 12 ounces of 458 grains each; but the pound by which the money was weighed appears to have conſiſted only of 420 grains to the ounce, or to have contained in all 5040 grains. This became the ſtandard of copper; and when ſilver came to be coined, ſeven denarii went to the ounce as eight drachms did in Greece. Gold was regulated by the *ſcripulum* or *ſcrupulum*, the third part of a denarius, and by the larger weights juſt mentioned. The number 10 was at firſt uſed by the Romans in counting their money; but finding afterwards that a ſmaller number was more convenient, they divided it into quarters; and as the quarter of 10 is 2½, they for this reaſon beſtowed upon it the name of *ſeſtertius* or "half the third;" to expreſs that it was two of any weights, meaſures, &c. and half a third; whence the ſeſtertius came at laſt to be the grand eſtimate of Roman money. The *as* being at firſt the largeſt, and indeed the only Roman coin, the word *ſeſtertius* means *ſeſtertius as*, or "two aſſes and an half." On the firſt coining of ſilver, the denarius of ten aſſes was ſtruck in the moſt common and convenient denary diviſion of money, or that by tens; the ſeſtertius being of courſe two aſſes and an half. But the denarius being afterwards eſtimated at 16 aſſes, the name ſeſtertius was ſtill applied to a quarter of the denarius, though it now contained four aſſes. The term *ſeſtertius*, was applied to all ſums not exceeding 1000 ſeſtertii, or L 8:6:8; but for greater ſums the mode of the ſeſtertius was likewiſe altered, though not to exclude the former. Very large ſums of money were eſtimated by the hundred weight of braſs; for the Romans were at firſt unacquainted with the talent. The hundred

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weight, by way of eminence, was diſtinguiſhed by the name of *pondus*, and *ſeſtertium pondus* became a phraſe for two hundred weight and an half. Mr Pinkerton is of opinion, that we may value the *as libralis* of ancient Rome at about eight-pence Engliſh. Eſtimating the *as* therefore at a pound weight, the *ſeſtertium pondus* was equal to 1000 *ſeſtertii*, or L.8:6:8; and by a coincidence which our author ſuppoſes to have been the effect of deſign, as ſoon as the ſilver coinage appeared, the *ſeſtertium centum denariorum* was always equal to L.8:6:8 alſo. The word *ſeſtertium* itſelf, however, ſeems to have been unknown prior to the coinage of ſilver money at Rome: the *pondera gravis æris* being ſufficient before that time for all the purpoſes of a ſtate in which money was ſo ſcarce. But however this may be, the *pondus* or hundred weight of braſs was preciſely worth 100 denarii, or a pound of ſilver. As the great ſeſtertium was always valued at 1000 of the ſmaller, or L.8:6:8, we never find one ſeſtertium mentioned in authors, but two, three, or more; ten thouſand of them being equal to L. 8,333,333:6:8.

Some coins are found which exceed the *as libralis* in weight; and theſe are ſuppoſed to be prior to the time of Servius Tullius. Some of them are met with of 34 and of 53 Roman ounces; having upon one ſide the figure of a bull rudely impreſſed, and upon the other the bones of a fiſh. They are moſt commonly found at Tudder, or Tudertum in Umbria; but they appear always broken at one end; ſo that Mr Pinkerton is of opinion, that perhaps ſome might be ſtruck of the decuſſis form, or weighing ten pounds. Theſe pieces, in our author's opinion, make it evident, that the Romans derived their large braſs coins from the Etruſcans and the neighbouring ſtates: they are all caſt in moulds; and the greater part of them appear much more ancient than the Roman aſſes, even ſuch as are of the greateſt antiquity.

Mr Pinkerton agrees with Sir Iſaac Newton as to the time that Servius Tullius reigned in Rome, which he ſuppoſes to be about 460 B. C. His coinage ſeems to have been confined to the as, or piece of braſs having the impreſſion of Janus on the one ſide and the prow of a ſhip on the other, becauſe Janus arrived in Italy by ſea. Varro, however, informs us, that the very firſt coins of Tullius had the figure of a bull or other cattle upon them, like the Etruſcan coins, of which they were imitations. Thoſe with the figure of Janus and the prow of a ſhip upon them may be ſuppoſed firſt to have appeared about 400 B. C. but, in a ſhort time, various ſubdiviſions of the as were coined. The *ſenis* or half is commonly ſtamped with the head of Jupiter laureated; the *triens* or third, having four cyphers, as being originally of four ounces weight, has the head of Minerva; the *quadrans* or quarter, marked with three cyphers, has the head of Hercules wrapt in the lion's ſkin; the *ſextans* or ſixth, having only two cyphers, is marked with the head of Mercury with a cap and wings; while the *uncia* having only one cypher, is marked with the head of Rome. All theſe coins appear to have been caſt in moulds, by a conſiderable number at a time; and in the Britiſh muſeum there are four of them all united together as taken out of the mould in which perhaps dozens were caſt together. In proceſs of time, however, the ſmaller diviſions were ſtruck inſtead of being caſt; but the larger ſtill continued to be caſt until the as fell to two ounces. Even after this time it was ſtill called *libra*, and accounted a pound of copper: though there were now larger denominations of it coined ſuch as the *biſſas* or double as: *treſſis* and *quadruſſis* of three and four aſſes; nay as far as *decuſſis* or ten aſſes, marked X. Olivieri mentions one in his own cabinet weighing upwards of 25 ounces, and caſt when the as was about three ounces weight. There is likewiſe in the Muſæum Etruſcum a decuſſis of 40 Roman ounces, caſt when the as was at four ounces. There was likewiſe a curious decuſſis in the Jeſuit's library at Rome, for which an Engliſh medalliſt offered 20l.; but it was ſeized by the Pope along with every other thing belonging to the ſociety.

The as decreaſed in weight at the following periods. About the year 300, B. C. it weighed 10 oz.—8 oz. about 290—6 oz. about 280—4 oz. about 270—3 oz. about 260—2 according to Pliny, about 250—1 according to the ſame author, about 214—And about 175, he ſays that the as was reduced to half an ounce by the Papyrian law, at which it continued till the time of Pliny himſelf, and long after.

After the Romans began to have an intercourſe with Greece, a variety of elegant figures appear upon the parts of the as, though not on the as itſelf till after the time of Sylla. Towards the latter end of the republic alſo, *dupondii*, or double aſſes, were coined, together with the *ſeſtertii æri*, which came in place of the *quadruſſes*, when the denarius began to be reckoned at 16 aſſes; probably at the time the latter was reduced to half an ounce. In ſome inſtances it is to be obſerved, that the Romans accommodated their coins to the country where their army was ſtationed; whence we have many coins marked as Roman, which have been coined in Magna Græcia and Sicily, and are evidently upon the Greek and not the Roman ſcale. In the latter part of the republican times, alſo, the types begin to vary; ſo that we have a braſs coin ſuppoſed to be ſtruck by Sextus Pompeius in Sicily, having upon it a double head of that warrior, repreſenting a Janus, Mr Pinkerton ſuppoſes it to have been a dupondius; which indeed appears to be the caſe from the double head. This coin is of copper, and ſtill weighs an ounce, notwithſtanding its antiquity.

The largeſt imperial copper coin was the SESTERTIUS, a piece worth about two-pence of our money.

No change took place in the Roman coinage from the time that the as fell to half an ounce to the days of Pliny: but Mr Pinkerton obſerves, that before the time of Julius Cæſar yellow braſs began to be uſed, and was always looked upon to be double the value of Cyprian or red copper. There are but few coins in large braſs immediately before Julius Cæſar, or even belonging to that emperor; but from the time of Auguſtus downward, the large coins are all found of braſs, and not one of them copper. The largeſt of what are called

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called the middle size are all of yellow brass; and the next size, which is the as, and weighs half an ounce, is universally copper. What the ancients named *orichalcum*, or what we call *brass*, was always looked upon to be greatly superior in value to the *æs Cyprium*. Procopius, speaking of a statue of Justinian, tells us, that brass inferior in colour to gold is almost equal in value to silver. The mines of nativæ brass were very few in number, and were owing entirely to the singular combination of copper and lapis calaminaris in the bowels of the earth, which very seldom occurs; and the ancients were far from being well acquainted with the method of combining these two bodies artificially; so that yellow brass was always esteemed at double the value of copper: and hence, in the ancient coinages, the brass and copper pieces were kept as distinct as those of gold and silver.

The sestertius underwent no change till the time of Alexander Severus, when it was diminished by one third of its weight. Trajanus Decius was the first who coined double sestertii, or quinarii, of brass: but from the time of Trebonianus Gallus to that of Gallienus, when the first brass ceases, the sestertius does not weigh above the third part of an ounce: the larger coins are accounted double sestertii; and after the time of Gallienus it totally vanishes. In the time of Valerian and Gallienus we find a new kind of coinage, mentioned by the name of *denarii æris*, or *Philippi ærei*. Two sizes of denarii began to be used in the time of Caracalla, the larger of six sestertii, or 24 assaria; the smaller of four sestertii, or 16 assaria, as usual. In the time of Pupienus, the latter was reduced to such a small size as not to weigh more than 36 grains; though in Caracalla's time it weighed 56. After the time of Gordian III. the smaller coin fell into disuse, as breeding confusion. The larger denarius of six sestertii, though diminished at last to the size of the early denarius, still retained its value of six sestertii, or 24 assaria. The *Philippus æreus* came at length in place of the sestertius. It was also called *denarius*; from which we may learn, not only their size, but that they were in value ten assaria, as the first denarius. In the reign of Diocletian, the place of the sestertius was supplied by the *follis*, that emperor having restored the silver coin to its purity, and likewise given this form to the copper; but it would seem that this restoration of the coinage only took place towards the end of his reign; whence we have but few of his silver coins, and still fewer of the *follis*, though the *denarii ærei* continue quite common down to the time of Constantine. The follis of Diocletian seems to have weighed above half an ounce; and Mr Pinkerton is of opinion, that Diocletian designed this coin to supply the place of the denarius æreus; which of course was worth ten assaria, and six of them went to the silver denarius. From this time the assarium diminishes to the size of 30 grains; and soon after the follis appeared, the denarius æreus was entirely dropped, the former having gradually supplied its place. Some mints appear to have retained the use of the denarius longer than others; and in some the change was preceded, and gradually brought in by washing the follis with silver or tin as the denarius had formerly been. Pieces of this kind occur in the times of Diocletian, Maximian I. and II. and Constantius I.; that is, for about ten years after the follis made its appearance. Some countries, however, retained the denarius æreus; others the follis; and some had a medium betwixt the two, or the follis washed in imitation of the denarius.

Towards the end of the reign of Constantine I. a new coinage was introduced throughout the whole empire. The follis coined by this prince was of half an ounce weight; 24 of them going to the milliarensis, or larger silver coin. The word *follis* signifies also a purse, in which sense we sometimes find it mentioned in the Byzantine history. The common follis of silver, when, it occurs by itself, means a purse of 250 milliarenses, as the sestertium was 250 denarii; and by a law of Constantine I. every man paid to the state a follis or purse according to his income. The method of counting by purses continues in Turkey to this day.

The *dupondius* was only half the value of the sestertius, or about one penny sterling; and before the yellow brass appeared it seems to have been struck upon copper, and double the size of the as. There are some of this coin, struck in the time of Julius Cæsar in yellow brass, weighing half an ounce, with a head of Venus Victrix upon one side; on the reverse, a female figure, with serpents at her feet; while others have a Victory on the reverse, with Q. Oppius Pr. After the time of Augustus, the dupondius was struck in yellow brass; which Pliny tells us was also the case in his time. The word dupondiarius seems to have been used by Pliny, and adopted, not to express that the coin was *dupondius*, but that it was of dupondiary value. Neither was the former word confined to signify double weight, but was used also for double length or measure, as in the instance of *dupondius pes*, or two feet, &c. In the imperial times, therefore, *dupondius* was used, not to signify a coin of double the weight of the as, but of double the value. It was one of the most common of the Roman coins; and seems to have been very common even in Constantinople. The dupondius, though of the same size with the as, is commonly of finer workmanship, the metal being greatly superior in value. It continued to be of yellow brass, as well as the sestertius, to the time of Gallienus; but the as is always of copper.

The imperial as, or *assarium*, was worth only an halfpenny. At first it weighed half an ounce, and was always of copper till the time of Gallienus, when it was made of brass, and weighed only the eight part of an ounce. From the time of Gallienus to that of Diocletian, it continued to diminish still more, the size being then 20 to an ounce. This was the same with the lepta, or smallest coins but the νουμια, which weighed only ten grains.

The parts of the as occur but seldom; which may indeed be well expected, considering the low value of it; though there still occur some of those called semis, triens, quadrans, sextans, and uncia, coined in the times of Nero and Domitian. There is no small brass from the time of Pertinax to that of Gallienus, excepting that of Trajanus Decius; but in the time of Gallienus it becomes

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extremely common; and the coins of small brass, as well as the larger, are always marked S. C.; such as want it universally being accounted forgeries, and were plated with silver, though the plating be now worn off. The small pieces struck for slaves during the time of the Saturnalia must also be distinguished from the parts of the as. The S. C. upon these most probably signifies *Saturni Consulto*, and were struck in ridicule of the true coins, as the slaves on that occasion had every privilege of irony.

The sestertius diminishes from Pertinax to Gallienus so fast, that no parts of the as are struck, itself being so small. Trajanus Decius, indeed, coined some small pieces, which went for the semis of the time. The small brass coins under Gallienus were called assaria, sixty of which went to the silver denarius. They are about the size of the denarius, and some of them occur, of the coinage of Gallus and his family, of half that size, which appear to have been struck during the latter part of his reign, when the assarium was diminished to a still smaller size. It is probable, however, that some of these very small coins had been struck in all ages of the empire, in order to scatter among the people on solemn occasions. Mr Pinkerton is of opinion that they are the *missilia*, though most other medallists think that they were medallions. "But if so (says our author), they were certainly called *missilia a non mittendo*; for it would be odd if fine medallions were scattered among the mob. It is a common custom just now to strike counters to scatter among the populace on such occasions, while medals are given to peers of the kingdom; and we may very justly reason from analogy on this occasion."

The *assarion* or *lepton* of the Constantinopolitan empire was one of the smallest coins known in antiquity, weighing no more than 20 grains; and the *noumia* were the very smallest which have reached our times, being only one half of the former. By reason of their extreme smallness, they are very scarce; but Mr Pinkerton informs us, that he has in his possession a fine one of Theodosius II. which has on it the emperor's head in profile, Theodosius P. F. AV.; on the reverse a wreath, having in the centre VOT. XX.: MULT. XXX.

The principal coin of the lower empire was the follis, which was divided into an half and a quarter, named ημισεολον and τετραντον; the latter of which is shown by Du Cange to have been a small brass coin, as the other is supposed to have been by Mr Pinkerton. Besides these, the follis was divided into 8 oboli, 16 assaria or lepta, and 32 noumia, though in common computation it contained 40 of these last. This coin, notwithstanding so many divisions, was of no more value than an halfpenny.

Mr Pinkerton controverts an opinion, common among medallists, that the largest brass coin or follis of the lower empire had 40 small coins, expressed by the letter M upon it; the next had 30, expressed by the letter A; the half by the letter K; and the quarter marked I, which contained only 10. Mr Pinkerton informs us, that he has three coins of Anastasius, all marked M in large: one of them weighs more than half an ounce; the second 40 grains less; and the third 160 grains, or one 3d of an ounce; but the size is so very unequal, that the last, which is very thick, does not appear above half the size of the first. There are pieces of Justinian which weigh a whole ounce; but the size of copper was increased as the silver became scarcer; and the value of the coinage cannot be deduced from the weight of the coins, as it is plain that our own coinage is not of half the value with regard to the metal. A great number of medallions were struck by Constantius II. but there is no other copper larger than the half ounce, excepting that of Anastasius, when the follis began to be struck larger. All medallists allow the others to be medallions.

The metal employed in these very small coins, though at first of brass, was always a base and refuse kind; but copper is generally made use of in the parts of the as from the earliest times to the latest; and if brass be sometimes employed, it is never such as appears in the sestertii and dupondiarii, which is very fine and beautiful, but only the refuse. "Yellow brass of the right sort (says Mr Pinkerton) seems totally to have ceased in the Roman coinage with the sestertius, under Gallienus, though a few small coins of very bad metal appear under that hue as late as Julian II."

Silver began to be coined in Rome so late as A. U. C. 485, or A. A. C. 266.

The first silver denarii coined at Rome, are supposed by our author to have been those which are impressed with the ROMA; and he inclines to account those the most ancient which have a double female head on the one side, and on the reverse Jupiter in a car, with victory holding the reins, and the word ROMA indented in a rude and singular manner. The double female head seems to denote Rome, in imitation of the Janus then upon the as. There are 15 of these in the cabinet of Dr Hunter; one of the largest weighs 98¼ grains; and the rest, which seem to be of greatest antiquity, are of various weights betwixt that and 84; the smaller and more modern weigh 58 or 59 grains; but Mr Pinkerton is of opinion, that the large ones are of the very first Roman coinage, and struck during that interval of time betwixt the coinage of the first silver denarius and the as of two ounces. He takes the indentation of the word ROMA to be a mark of great antiquity; such a mode being scarcely known anywhere else, except in Caulonia, Crotona, and other towns of Italy; all of them allowed to be struck at least 400 B. C. As these large coins are not double denarii, they must have been struck prior to the small ones; and Newmann has given an account of one of them recoined by Trajan, in which the indentation of ROMA is carefully preserved. The first denarius was in value 10 asses, when the as weighed three ounces; and allowing 90 grains at a medium for one of these large denarii, the proportion of copper to silver must have been as 1 to 160; but when the as fell to one ounce, the proportion was as 1 to 80; when it fell to half an ounce, so that 16 asses went to the denarius, the proportion was as 1 to 64, at which it remained. Copper with us, in coinage, is to silver as 1 to 40; but in actual value as 1 to 72.

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At Rome the denarius was worth 8d.; the quinarius 4d.; and the ſeſtertius, whether ſilver or gold, 2d. The denarius is the coin from which our penny is derived, and was the chief ſilver coin in Rome for 600 years. According to Celſus, 7 denarii went to the Roman ounce, which in metals did not exceed 430 grains; but as all the denarii hitherto met with weigh at a medium only 60 grains, this would ſeem to make the Roman ounce only 420 grains; though perhaps this deficiency may be accounted for from the unavoidable waſte of metal even in the beſt preſerved of theſe coins. According to this proportion, the Roman pound contained 84 denarii; but in tale there was a very conſiderable exceſs; for no fewer than 100 denarii went to the Roman pound. The Greek ounce appears to have been conſiderably larger than that of Rome, containing about 528 grains; yet notwithſtanding this apparently great odds, the difference in the coins was ſo ſmall, that the Greek money went current in Rome, and the Roman in Greece. The denarius at firſt went for 10 aſſes, and was marked X; it was afterwards raiſed to 16; which Mr Pinkerton ſuppoſes to have been about 175 B. C. Some are met with bearing the number XVI. nay, with every number up to CCCCLXXVI. Theſe large numbers are ſuppoſed to have been mint-marks of ſome kind or other. After being raiſed to 16 aſſes, it continued at the ſame value till the time of Gallienus; ſo that, till that time, we are to look upon its conſtituent parts to be 16 aſſes or aſſaria, eight dupondii, four braſs ſeſtertii, and two ſilver quinarii. Under the emperor Severus, however, or his ſucceſſor Caracalla, denarii were ſtruck of two ſizes, one of them a third heavier than the common; which we muſt of conſequence ſuppoſe to have borne a third more value. This large piece obtained the name of *argenteus*, and *argenteus Philippus*, or the "ſilver Philip;" the name of Philip having become common to almoſt every coin. The common denarii now began to be termed *minuti* and *argentei Philippi minutuli*, &c. to expreſs them being ſmaller than the reſt. Some have imagined that the large denarii were of the ſame value with the ſmall, only of worſe metal; but Mr Pinkerton obſerves, that among the few which have any difference of metal, the ſmalleſt are always the worſt. The firſt mention of the *minuti* is in the time of Alexander Severus, who reduced the price of pork from eight minuti at Rome to two and to one. The *minutus argenteus* of that age was about 40 grains; and, from the badneſs of the metal, was not worth above 4d. of our money. Thus the price of meat was by this prince reduced firſt to 8d. and then to 4d.

According to Zoſimus and other writers, the purity of the Roman coin was reſtored by Aurelian: but Mr Pinkerton controverts this opinion; thinking it more probable that he only made the attempt without ſucceſs, or that his reformation might be entirely confined to gold, on which there is an evident change after the time of this emperor. His ſucceſſor Tacitus is ſaid to have allowed no braſs to be mixed with ſilver on any account; yet the few coins of this emperor are very much alloyed. We are certain, however, that the emperor Dioclefian reſtored the ſilver to its ancient purity; the denarii ſtruck in his reign being very ſmall indeed, but of as fine ſilver as the moſt ancient coins of the empire. After Gordian III. the ſmall denarius entirely vaniſhed, while the large one was ſo much diminiſhed, that it reſembled the *minutus*, or ſmall one of Caracalla, in ſize. Gallienus introduced the *denarii ærei* inſtead of the *ſeſtertii*. The *argenteus*, though reduced more than one third in ſize, contained ſix denarii ærei, the old ſtandard of ſeſtertii. According to the writers of this period, and ſome time afterwards, the denarius argenteus contained 60 aſſaria; whence it follows, that each denarius æreus had 10; and from this it probably had its name. The aſſaria are of the ſize of the argentei already mentioned; and ſhow the copper to have retained nearly its old proportion of value to the ſilver, viz. 1 to 60.

A larger ſilver coin was introduced by Conſtantine I. who accommodated the new money to the pound of gold in ſuch a manner, that 1000 of the former in tale were equal to the latter in value; ſo that this new piece from thence obtained the name of the *milliarenſis*, or "thouſander." Its weight, at a medium, is 70 grains, or 70 to the pound of ſilver; but Mr Pinkerton is of opinion, that it might have contained 72 grains, of which two have now periſhed by the ſoftneſs of the ſilver; that the pound contained 72; or that two of the number might be allowed for coinage, while the alloy alone would pay for coining gold. The code ſays, that 60 went to the pound; but the numbers of this are quite corrupt. The *milliarenſis* was worth about a ſhilling ſterling. The argentei denarii, however, were ſtill the moſt common currency; and having been originally rated at the 100 to the pound of ſilver in tale, they from hence began to be called *centenionales*, or "hundreders." Thoſe of Conſtantine I. and II. Conſtans, and Conſtantius, weigh from 50 grains down to 40; thoſe of Julian and Jovian, from 40 to 30; and of the ſucceeding emperors from that time to Juſtinian, from 30 to 20. Under Heraclius they ceaſed entirely; and from Juſtinian to their total abolition, had been brought down from 15 to 10 grains. A like decreaſe of weight took place in the milliarenſis; thoſe of Conſtantine and Conſtans being above 70 grains in weight; thoſe of Arcadius not above 60; and the milliarenſis of Juſtinian not more than 30 grains; but, from the weight of thoſe in Dr Hunter's cabinet, Mr Pinkerton deduces the medium to have been exactly 70$\frac{1}{2}$ grains. Theſe coins were alſo called *majorinæ*.

The ſmaller ſilver coins of Rome were, 2. The *quinarius*, at firſt called *victoriatus*, from the image of Victory on its reverſe; and which it continued to bear from firſt to laſt. Its original value was five aſſes, but it was afterwards raiſed to eight, when the value of the denarius increaſed to 16. According to Pliny, it was firſt coined in conſequence of the *lex Clodia*, about the 525th year of Rome. Some are of opinion, that it was called κεράτιον under the Conſtantinopolitan empire, becauſe it was worth a κεράτιον of gold, 144 of which went to the ounce; but this is denied by Mr Pinkerton, becauſe, at the time that the word κεράτιον firſt appears in hiſtory, the denarius did not

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not weigh above 30 grains; and of consequence, as 25 must have gone to the gold solidus, of which there were six in the ounce, 150 denarii must have gone to the ounce of gold. He is therefore of opinion, that the word κεραtιον was only another name for the denarius when much reduced in size; probably owing to the great scarcity of silver in Constantinople, though in the same city there was plenty of gold; and of consequence, the gold solidus was never diminished. "For Montesquieu (says our author) has well observed, that gold must be common where silver is rare. Hence gold was the common regulation of accounts in the eastern empire." The κεραtιον met with in ancient authors, according to Mr Pinkerton, was merely an improper name for the *milliarensis*, when, on account of the scarcity of silver, the denarius was reduced, and no milliarensis coined: so that the current milliarensis of former reigns happened to be double to the denarius or centenialis. The quinarius diminishes in size along with the other coins; those of Augustus weighing 30 grains, of Severus 25, of Constantine I. 20, of Justinian 12; and of Heraclius only 5. A new silver coinage seems to have taken place after the days of this emperor; as the little we then meet with, which in the best cabinets scarce exceeds a dozen of coins, consists entirely of large unshapely pieces of coarse metal.

2. The consular denarius had also four silver sestertii, till the as fell to half an ounce, when it was thought proper to coin the sestertius in brass, as it continued to be ever afterwards. "The very last silver sestertius (says Mr Pinkerton) which appears, is one with a head of Mercury, and H. S.; on the reverse a caduceus P. SEPVLLIVS; who appears to be the P. SEPVLLIVS MACER of the denarii of Julius Cæsar. If so, as is most probable, the sestertius was coined in silver down to Augustus; and it is of course not to be expected that any of brass can appear till Augustus, under whom they are actually quite common. I have indeed seen no coin which could be a consular brass sestertius; and though we have certainly brass dupondii of Cæsar, yet it is reasonable to infer, that the brass sestertius was first coined by Augustus. Not one silver sestertius appears during the whole imperial period; yet we know that the sestertius was the most common of all silver coins. The consular sestertii of silver, marked H. S. are not uncommon, as the quinarii; but the latter are very scarce of all the emperors, if we except one inscribed AVGVSTI RECEPTA of Augustus.

"The Roman gold coinage was still later than that of silver. Pliny tells us, that "gold was coined 61 years after silver, and the scruple went for 60 sesterces. It was afterwards thought proper to coin 40 pieces out of the pound of gold. And our princes have by degrees diminished their weight to 45 in the pound." This account is confirmed by the pieces which still remain; for we have that very coin weighing a scruple, which went for 20 sesterces. On one side is the head of Mars, and on the other an eagle; and it is marked XX. We have another coin of the same kind, but double, marked XXXX; and its triple, marked ℔X, or 60; the ℔ being the old numeral character for 50."

The *aurei*, or Roman gold coins, were at first 48 in the pound; but they were afterwards diminished in number to 40, owing to an augmentation in the weight of each coin. In the time of Sylla, the aureus weighed no less than from 164 to 168 grains, and there were only 30 in the pound; but such confusion in the coinage was introduced by that conqueror, that no person could know exactly what it was worth. Till this time the aureus seems to have continued of the value of 30 silver denarii, about one pound sterling; for about that time it was enlarged a whole third, that it might still be equivalent to the full number of denarii. But after Sylla had taken Athens, and the arts and manners of Greece became objects of imitation to the Romans, the aureus fell to 40 in the pound, probably when Sylla had abdicated his dictatorship. Thus, being reduced near to the scale of the Greek χρυσος, it passed for 20 denarii, as the latter did for as many drachmas, being in currency 13s. 4d. sterling. "This (says Mr Pinkerton) is the more probable, because we know from Suetonius, that the great Cæsar brought from Gaul so much gold, that it sold for nine times its weight of silver: but the Gallic gold was of a very base sort."

In the time of Claudius, the aureus was valued at 100 sestertii, or 25 silver denarii, at which it continued till the time of Heliogabalus, when it fell to about 92 grains at a medium, or rose in number to 55 in the pound. In the reign of Philip, during which the city completed its thousandth year, the aureus was coined of two or three sizes. These are impressed with a head of Rome on one side, and various figures on the other; but the workmanship is so rude, that they are supposed to have been struck in some of the more uncivilized provinces of the empire. The practice of having different gold coins, however, continued under Valerian, Gallienus, and his successors. In the time of Gallienus, they were of 30, 65, and from 86 to 93 grains; the double aurei being from 172 to 183½ grains; but the aureus, properly so called, was from 86 to 93; those of 30 and 52 being the *trientes aurei* of the *Historiæ Augustæ Scriptores*; while the larger, from 62 to 65, are to be accounted double trientes, and were perhaps called *minuti aurei*. The value of these different sizes of aurei is not known.

That Aurelian made some alteration in the coin is certain; but Mr Pinkerton supposes it to have been only in the gold; because, under him and his successor Probus, the common aureus was of 100 grains, a size confined to those emperors: there are likewise halves of about 50 grains; and double aurei, commonly of very fine workmanship, of upwards of 200 grains. In the time of Gallienus, the precious metal was so common, that this emperor vied in magnificence with Nero and Heliogabalus. Aurelian, who plundered the rich city of Palmyra, and thus became master of the treasures of the east, obtained such a profusion of gold, that he looked upon it to be produced by nature in greater plenty than silver. It is remarkable, that during this emperor's reign there was a rebellion among the money-coiners, which could not be quelled but by the destruction of several thousands; which Mr Pinkerton ascribes to his having ordered the

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the gold to be reſtored to its former ſize, but to go for no more ſilver than it formerly did. "So very little ſilver (ſays he) occurs of this period, that it is plain no alteration in the ſilver produced the war with the moneyers: and in the braſs he made no change; or if he had, it were ſtrange that ſuch commotions ſhould ariſe about ſo trifling a metal. But if, as appears from the coins, he ordered the aureus which had fallen to 80 grains, to be raiſed to about 100, it is no wonder that the contractors ſhould be in an uproar; for a whole quarter of their coinage, amounting as would ſeem to all their profits, was loſt. Aurelian judged, that when he found gold ſo common in the eaſt, it was equally ſo in the weſt; and that the moneyers muſt have made a moſt exorbitant profit; but his ideas on this ſubject were partial and unjuſt: and after his ſhort reign, which did not exceed five months after the alteration, the gold returned to its former courſe; though a few pieces occur of Aurelian's ſtandard, ſtruck, as would ſeem, in the commencement of the reign of Probus his ſucceſſor.

From this time to that of Conſtantine I. the aureus weighed between 70 and 80 grains; but in his reign it was changed for the ſolidus, of which ſix went to the ounce of gold, which went for 14 milliarenſes, and 25 denarii as before; the value of ſilver being now to gold as 14 to 1. This new coin continued of the ſame value to the final downfal of the Conſtantinopolitan empire; gold being always very plentiful in that city, though ſilver became more and more ſcarce. The ſolidus was worth 12s. ſterling.

The gold coins called BEZANTS in Europe, becauſe ſent from Byzantium or Conſtantinople; were *ſolidi* of the old ſcale, ſix to the ounce. In Byzantine writers, the ſolidus is alſo called *nomiſma*, or "the coin;" *cryſinos*, becauſe of gold; *hyperperos*, from its being refined with fire, or from its being of bright gold flaming like fire. The *ſolidi* alſo, as the *aurei* formerly, received names from the princes whoſe portraits they bore; as *Michelati, Manuelati*. *Solidus* is a term uſed alſo for the aureus, by Apuleius who lived in the time of Antoninus the Philoſopher; nay, as early as the Prætorian edicts of the time of Trajan. It was then a diſtinction from the ſemiſſis or half. In the time of Valerian, when aurei of different ſizes had been introduced, it became neceſſary to diſtinguiſh the particular aurei meant. Hence in the Imperial Reſcripts, publiſhed by the *Hiſtoriæ Auguſtæ Scriptores*, Valerian uſed the term *Phillipeos noſtri vultus*, for the common aurei. Aurelian uſes the ſame term *aurei Philippei*, for the aurei which he had reſtored to their ſize in ſome degree. Gallienus uſes *aurei Valeriani* for his father's coins. *Aurei Antoniniani* are likewiſe put by Valerian for coins of the early Antonini, of ſuperior ſtandard to any then uſed.

In the firſt gold coinage at Rome, the aureus was divided into four parts; the ſemiſſis of 60 ſeſtertii; the tremiſſis, or third, of 40; the fourth, the name of which is not mentioned, of 30; and the ſcrupulum of 20. But in a ſhort time all theſe fell into diſuſe; except the ſemiſſis or half, which is extremely ſcarce: ſo that it is probable that few have been ſtruck. It is an erroneous opinion (according to Mr Pinkerton) that the ſemiſſis was called a *denarius aureus*. The aureus itſelf indeed had this name; but the name of *quinarius* is applied to the ſemiſſis with greater propriety than the former. Trientes, or tremiſſis of gold are found of Valerian and his ſon Gallienus, and weigh about 30 grains. Thoſe of Salonina the wife of Gallienus weigh 33 grains. Under the Conſtantinopolitan empire, tremiſſes again made their appearance; and from the time of Valentinian downwards the thirds are the moſt common coins of gold, being worth about 4s. ſterling. The ſemiſſis is likewiſe mentioned, but none occur earlier than the time of Baſiliſcus. The gold tremiſſis was the pattern of the French and Spaniſh gold coins; as the ſilver denarius, in its diminiſhed ſtate, was of the Gothic and Saxon penny.

The Romans, in order to aſſiſt the high relief on the coins, melted and refined the caſt metal into bullet, as appears from the ancient coins not being cut or filed on the edges, but often cracked, and always rough and unequal. Theſe bullets were then put into the dye, and received the impreſſion by repeated ſtrokes of the hammer, though ſometimes a machine appears to have been uſed for this purpoſe: for Boiterue informs us, that there was a picture of the Roman mintage in a grotto near Baiæ, where a machine was repreſented holding up a large ſtone as if to let it fall ſuddenly, and ſtrike the coin at once. None of the ancient money was caſt in moulds, excepting the moſt ancient and very large Roman braſs, commonly called *aweights*, and other Italian pieces of that ſort; all the reſt being mere forgeries of ancient and modern times. Some Roman moulds which have been found are a proof of this; and from theſe ſome medalliſts have erroneouſly imagined that the ancients firſt caſt their money in moulds, and then ſtamped it, in order to make the impreſſion more clear and ſharp.

The ancients had ſome knowledge of crenating the edges of their coins, which they did by cutting out regular notches upon them; and of this kind we find ſome of the Syrian and ancient conſular coins, with a few others. The former were caſt in this ſhape and then ſtruck; but the latter were crenated by inciſion, to prevent forgery, by ſhowing the inſide of the metal: however, the ancient forgers alſo found out a method of imitating this; for Mr Pinkerton informs us, that he had a Roman conſular coin of which the inciſions, like the reſt, were plated with ſilver over the copper.

SECT V. *Of the* PRESERVATION *of* COINS *and* MEDALS.

WE now come to conſider what it is that diſtinguiſhes one medal from another, and why ſome are ſo highly prized more than others. This, in general, beſides its genuineneſs, conſiſts in the high degree of preſervation in which it is. This, by Mr Pinkerton, is called the *conſervation* of medals, and is by him regarded as *good* and as *perfect*. In this, he ſays, that a true judge is ſo nice, that he will reject even the rareſt coins if in the leaſt defaced either in the figures or legend. Some, however, are obliged to content themſelves with thoſe which are a little rubbed, while thoſe of ſuperior taſte and abilities have in their cabinets only ſuch

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ſuch as are in the very ſtate in which they came from the mint; and ſuch, he ſays, are the cabinets of Sir Robert Auſtin, and Mr Walpole, of Roman ſilver, at Strawberryhill. It is abſolutely neceſſary, however, that a coin be in what is called *good* preſervation; which in the Greek or Roman emperors, and the colonial coins, is ſuppoſed to be when the legends can be read with ſome difficulty; but when the conſervation is perfect, and the coin juſt as it came from the mint, even the moſt common coins are valuable.

The fine ruſt, like varniſh, which covers the ſurface of braſs and copper coins, is found to be the beſt preſerver of them; and is brought on by lying in a certain kind of ſoil. Gold cannot be contaminated but by iron mold, which happens when the coin lies in a ſoil impregnated with iron; but ſilver is ſuſceptible of various kinds of ruſt, principally green and red; both of which yield to vinegar. In gold and ſilver coins the ruſt muſt be removed, as being prejudicial; but in braſs and copper it is preſervative and ornamental; a circumſtance taken notice of by the ancients. "This fine ruſt (ſays Mr Pinkerton), which is indeed a natural varniſh not imitable by the art of man, is ſometimes a delicate blue, like that of a turquoiſe; ſometimes of a bronze brown, equal to that obſervable in ancient ſtatues of bronze, and ſo highly prized; and ſometimes of an exquiſite green, a little on the azure hue, which laſt is the moſt beautiful of all. It is alſo found of a fine purple or olive, and of a cream colour or pale yellow: which laſt is exquiſite and ſhows the impreſſion to much advantage, as paper of cream colour, uſed in all great foreign preſſes, does copperplates and printing. The Neapolitan patina (the ruſt in queſtion) is of a light green; and when free from excreſcence or blemiſh is very beautiful. Sometimes the purple patina gleams through an upper coat of another colour, with as fine effect as a variegated ſilk or gem. In a few inſtances a ruſt of a deeper green is found; and it is ſometimes ſpotted with the red or bronze ſhade, which gives it quite the appearance of the Eaſt Indian ſtone called the *blood ſtone*. Theſe ruſts are all, when the real product of time, as hard as the metal itſelf, and preſerve it much better than any artificial varniſh could have done; concealing at the ſame time not the moſt minute particle of the impreſſion of the coin."

The value of medals is lowered when any of the letters of the legend are miſplaced; as a ſuſpicion of forgery is thus induced. Such is the caſe with many of thoſe of Claudius Gothicus. The ſame, or even greater, diminution in value, takes place in ſuch coins as have not been well fixed in the dye, which has occaſioned their ſlipping under the ſtrokes of the hammer, and thus made a double or triple image. Many coins of this kind are found in which the one ſide is perfectly well formed, but the other blundered in the manner juſt mentioned. Another blemiſh but of ſmaller moment, and which to ſome may be rather a recommendation, is when the workmen through inattention have put another coin into the dye without taking out the former. Thus the coin is convex on one ſide and concave on the other, having the ſame figure upon both its ſides.

The medals ſaid by the judges in this ſcience to be *countermarked* are very rare, and highly valued. They have a ſmall ſtamp impreſſed upon them, in ſome an head, in others a few letters, ſuch as AUG: N. PROBUS, &c. which marks are ſuppoſed to imply an alteration in the value of the coin; as was the caſe with the countermarked coins of Henry VIII. and Queen Mary of Scotland. Some have a ſmall hole through them, ſometimes with a little ring faſtened in it, having been uſed as ornaments; but this makes no alteration in their value. Neither is it any diminution in the value of a coin that it is ſplit at the edges; for coins of undoubted antiquity have often been found in this ſtate, the cauſe of which has already been explained. On the contrary, this cracking is generally conſidered as a great merit; but Mr Pinkerton ſuſpects that one of theſe cracked coins has given riſe to an error with reſpect to the wife of Caraufius who reigned for ſome time in Britain. The inſcription is read ORIUNA AUG: and there is a crack in the medal juſt before the O of oriuna. Without this crack Mr Pinkerton ſuppoſes it would have been read FORTUNA AUG.

Some particular ſoils have the property of giving ſilver a yellow colour as if it had been gilt. It naturally acquires a black colour through time, which any ſulphurous vapour will bring on in a few minutes. From its being ſo ſuſceptible of injuries, it was always mixed by the ancients with much alloy, in order to harden it. Hence the impreſſions of the ancient ſilver coins remain perfect to this day, while thoſe of the modern coins are obliterated in a few years. On this account Mr Pinkerton expreſſes a wiſh, that modern ſtates would mix a much greater proportion of alloy in their ſilver coin than they uſually do. As gold admits of no ruſt except that from iron above mentioned, the coins of this metal are generally in perfect conſervation, and freſh as from the mint.

To clean gold coins from this ruſt, it is beſt to ſteep them in aquafortis, which, though a very powerful ſolvent of other metals, has no effect upon gold. Silver may be cleanſed by ſteeping for a day a or two in vinegar, but more effectually by boiling in water with three parts of tartar and one of ſea-ſalt; on both theſe metals, however, the ruſt is always in ſpots, and never forms an entire incruſtration as on braſs or copper. The coins of theſe two metals muſt never be cleanſed, as they would thus be rendered full of ſmall holes eaten by the ruſt. Sometimes, however, they are found ſo totally obſcured with ruſt, that nothing can be diſcovered upon them; in which caſe it is beſt to clear them with a graver; but it may alſo be done by boiling them for 24 hours in water with three parts of tartar and one of alum; not ſea-ſalt as in ſilver coins.

Sect. VI. *Of the* DISTINCTION *between* GENUINE MEDALS *and* COUNTERFEITS.

The moſt difficult and moſt important thing in the whole ſcience of Numiſmatography is the method of diſtinguiſhing the true from the counterfeit. The value put upon ancient coins made the forgery of them almoſt coeval with the ſcience itſelf; and as no laws inflict a puniſhment upon ſuch forgers, men of great genius and abilities have undertaken the trade.

Forgeries

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Forgeries are more conſpicuous among the Roman medals than any other kind of coins: but we are not to look upon all theſe as the work of modern artiſts. On the contrary, we are aſſured that many of them were fabricated in the times of the Romans themſelves, ſome of them being even held in more eſtimation than the genuine coins themſelves, on account of their being plated, and otherwiſe executed in a manner to which modern forgers could never attain. Even the ancients held ſome of theſe counterfeits in ſuch eſtimation, that Pliny informs us there were frequently many true denarii given for one falſe one.

Of the Roman conſular coins not very many have ever been forged. The celebrated ſilver denarius of Brutus, with the cap of liberty and two daggers, is the chief inſtance of a conſular coin of which a counterfeit is known. But it is eaſily rejected by this mark: in the true coin the cap of liberty is below the guard or hilt of the daggers; in the falſe, the top of it riſes above that hilt.

The imperial ſeries of medals is the grand object of modern medallic forgeries; and the deception was at firſt extended to the moſt eminent writers upon the ſubject. The counterfeits are by Mr Pinkerton divided into ſix claſſes:

I. Such as are known to be imitations, but valued on account of the artiſts by which they are executed. In this claſs the medals of Cavino the Paduan, rank higheſt; the others being ſo numerous, that a complete ſeries of imperial medals of almoſt every kind, nay almoſt of every medallion, may be formed from among them.

The Paduan forgeries may be diſtinguiſhed from thoſe of inferior artiſts by the following marks: 1. The former are ſeldom thinner than the ancient, which others almoſt always are. 2. They very ſeldom appear as worn or damaged, but the others very frequently, eſpecially in the reverſe, and legend of the reverſe, which ſometimes, as in forged Othos, appear as half conſumed by time. 3. The letters in moulds taken from the antique coins have the rudeneſs of antiquity. 4. Falſe varniſh is commonly light green or black, and ſhines too much or too little. 5. The ſides of forged coins are frequently quite ſmooth, and undiſtinguiſhable from the ancient, though to accompliſh this requires but little art. 6. Counterfeit medals are frequently as irregular in their form as the genuine; but the Paduan are generally circular; though falſe coins have often little pieces cut off, in perfect imitation of the genuine. 7. In caſt coins the letters do not go ſharp down into the metal, and have no fixed outline; their minute angles, as well as thoſe of the drapery, are commonly filled up, and have not the ſharpneſs of the genuine kind. Where the letters or figures are faint, the coin is greatly to be ſuſpected.

The letters form the great criterion of medals, the ancient being very rude, but the modern otherwiſe; the reaſon of which according to Cellini, is, that the ancients engraved all their matrices with the graver or burin, while the modern forgers ſtrike theirs with a punch.

According to Vico, the falſe patina is green, black, ruſſet brown, grey, and iron-colour. The trial of braſs coins with the tongue is not to be deſpiſed; for if modern, the patina taſtes bitter or pungent, while if ancient it is quite taſteleſs.

Mr Pinkerton informs us that all medallions from Julius Cæſar to Adrian are much to be ſuſpected of forgery; the true medals of the firſt 14 emperors being exceedingly valuable, and to be found only in the cabinets of princes.

II. The ſecond claſs of counterfeit medals contains thoſe caſt from moulds taken from the Paduan forgeries, and others done by eminent maſters. Theſe are ſometimes more difficult to be diſcovered than the former, becauſe in caſting them they can give any degree of thickneſs they pleaſe; and filling the ſmall ſand holes with maſtic, they retouch the letters with a graver, and cover the whole with varniſh. The inſtructions already given for a former claſs, however, are alſo uſeful for thoſe of the ſecond, with this addition that metals of this claſs are generally lighter than the genuine, becauſe fire rarifies the metal in ſome degree, while that which is ſtruck is rather condenſed by the ſtrokes.

III. *Medals caſt in moulds from an antique.*—The directions given for diſcovering the two former deceptions hold good alſo in this.

IV. *Ancient medals retouched and altered.*—This is a claſs of counterfeits more difficult to be diſcovered than any other. The art, (ſays Mr Pinkerton) exerted in this claſs is aſtoniſhing; and a connoiſſeur is the leſs apt to ſuſpect it, becauſe the coins themſelves are in fact ancient. The Italian artiſts alter the portraits, the reverſes, and the inſcriptions themſelves, in a ſurpriſing manner. This fraud is diſtinguiſhed by the falſe varniſh which ſometimes maſks it; but, above all, by the letters of the legend, which are always altered. Though this be ſometimes done with an artifice almoſt miraculous, yet moſt commonly the characters ſtraggle, are diſunited, and not in a line. In counterfeits of this kind, ſometimes the obverſe is not touched, but the reverſe made hollow, and filled with maſtic coloured like the coin, and engraven with ſuch device and legend as was moſt likely to bring a great price; others are only retouched in ſome minute parts, by which, however, the value of the coin is much diminiſhed.

V. *Medals impreſſed with new devices or ſoldered.* In the firſt article of this claſs the reverſes have been totally filed off, and new ones impreſſed with a dye and hammer. The difference of fabrication in the face or reverſe will be diſcovered at the firſt glance by any perſon of ſkill.

The ſoldered medals conſiſt of two halves belonging to different medals, ſawed through the middle and then joined with ſolder. This mode of counterfeiting is common in ſilver and braſs coins. Medals which have a portrait on each ſide, and which are generally valuable, are the moſt liable to a ſuſpicion of this fraud. To a very nice eye the minute ring of ſolder is always viſible; and upon inſerting a graver, the fabrication falls into halves.

VI. *Plated medals or thoſe which have clefts.*—It has been already remarked, that many true medals are cracked in the edges; owing to the repeated ſtrokes of the hammer, and the little degree of ductility which the metal poſſeſſes. This the forgers attempt to imitate by a file; but it

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is eaſy to diſtinguiſh betwixt the natural and artificial cleft by means of a ſmall needle. The natural cleft is wide at the extremity, and appears to have a kind of almoſt imperceptible filaments; the edges of the crack correſponding with each other, in a manner which no art can imitate.

The plated medals which have been forged in ancient times were long ſuppoſed to be capable of reſiſting every effort of modern imitation; but of late years ſome ingenious rogues (ſays Mr Pinkerton) thought of piercing falſe medals of ſilver with a red hot needle, which gave a blackneſs to the inſide of the coin, and made it appear plated to an injudicious eye. This fraud is eaſily diſtinguiſhed by ſcraping the inſide of the metal." It is, however, very difficult to diſtinguiſh the forgeries of rude money when not caſt; and our author gives no other direction than to conſult a ſkilful medalliſt. Indeed, notwithſtanding all the directions already given, this ſeems to be a reſource which cannot by any means ſafely be neglected.

Forgeries of modern coins and medals, are almoſt as numerous as of the ancient.

Sect. VII. *Of the* Value *of* ancient Coins *and* Medals.

All ancient coins and medals, though equally genuine, are not equally valuable. In medals, as well as in every thing elſe, the ſcarcity of a coin ſtamps a value upon it which cannot otherwiſe be derived from its intrinſic worth. There are four or five degrees of rarity reckoned up; the higheſt of which is called unique. The cauſe is generally aſcribed to the fewneſs of number thrown off originally, or to their having been called in, and recoined in another form.

Sometimes the rareſt coins loſe their value, and become common. This our author aſcribes to the high price given for them, which tempts the poſſeſſors to bring them to market; but chiefly to the diſcovering of hoards of them. The former cauſe took place with Queen Anne's farthings, ſome of which formerly ſold at five guineas; nay, according to the newſpapers, one of them was, ſeveral years ago, ſold for no leſs than 960 l.! The latter cauſe took place with the coins of Canute the Great, king of England and Denmark, which were very rare till a hoard of them was diſcovered in the Orkneys. As ſuch diſcoveries, however, produce a temporary plenty, ſo, when they are diſperſed, the ſcarcity returns, while ſome of the common coins become rare, merely through neglect.

As there are many more *copper* coins of Greek cities to be met with than *ſilver*, the latter are much more valued; but the reverſe is the caſe with thoſe of the Grecian monarchs. All the Greek civic coins of ſilver are very rare, excepting thoſe of Athens, Corinth, Meſſana, Dyrrhachium, Maſſilia, Syracuſe, and ſome others. Of the Greek monarchic coins, the moſt rare are the tetradrachms of the kings of Syria, the Ptolemies, the kings of Macedon and Bithynia, excepting thoſe of Alexander the Great and Lyſimachus. Thoſe of the kings of Cappadocia are of a ſmall ſize, and hardly to be met with. Of theſe of Numidia and Mauritania, the coins of Juba the father are common; but thoſe of the ſon and nephew, Ptolemy, are ſcarce. Coins of the kings of Sicily, Parthia, and Judæa, are rare; the laſt very much ſo. We meet with no coins of Arabia and Comagene except in braſs; thoſe of the kings of Bolphorus are in electrum, and a few in braſs, but all of them rare; as are alſo thoſe of *Philetærus*, king of Pergamus, and of the kings of Pontus. In 1777, a coin of Mithridates ſold for 26 l. 5s. Didrachms of all kings and cities are ſcarce, excepting thoſe of Corinth and her colonies; but the gold coins of Philip II. of Macedon, Alexander the Great, and Lyſimachus, are common. The ſilver tetradrachms of all kings bear a very high price. The didrachm of Alexander the Great is one of the ſcarceſt of the ſmall ſilver Greek coins: ſome of the other princes are not uncommon.

The *copper* money of the Greek monarchs in general is ſcarce, but that of Hiero I. of Syracuſe is uncommonly plentiful, as well as that of ſeveral of the Ptolemies of Egypt. Many of the copper civic coins of Greece, too, are alſo common. They are almoſt all of thoſe ſizes which are called *ſmall braſs* in the Roman ſeries: the middle ſize is ſcarce. The largeſt, prior to the Roman emperors are extremely rare. The common Grecian civic coins in ſmall braſs ſell at from 3d. to 1s. 6d. according to their preſervation. Very many cities, however, of which not above one or two coins are known to be extant, and thoſe of braſs, bring far higher prices. "The want of a few cities, however, ſays Mr Pinkerton, is not thought to injure a collection; as indeed new names are diſcovered every year, ſo that no aſſortment can be perfect. To this it is owing that the rarity of the Grecian civic coins is not much attended to." The Greek copper coins are for the moſt part ſcarcer than the ſilver, except the *Syro-Grecian*, which are common, and almoſt all of the ſize called *ſmall braſs*. They ought (ſays Pinkerton) to bear a high price; but the metal and ſimilarity to the copper civic coins, which are common, keep their actual price moderate, if the ſeller is not well inſtructed, and the buyer able and willing to pay the price of rarity."

The *gold* coins of Philip II. and Alexander the Great, being very common, bear but from 5s. to 10s. above their intrinſic value; but thoſe of the other princes, being rare, ſell at from 3l. to 30l. each, or even more.

The tetradrachms are the deareſt of the *ſilver* monarchic money, ſelling at from 5s. to 10s. and if very rare, from 3l. to 30l. each. Half of theſe prices may be given for the drachmas, and the coins of the other denominations in proportion.

The gold coins of Carthage, Cyrene, and Syracuſe are worth about double their intrinſic value as metal; but the other gold civic coins are worth from 5l. to 30l. each. The only gold coins of Athens certainly known to exiſt are two purchaſed a few years ago by his majeſty, one of which remains in the royal cabinet, and the other was given by the queen to Dr Hunter. There was another in the Britiſh Muſeum, but it is ſuſpected not to be genuine. Dr Hunter's coin then, if ſold, would draw the higheſt price perhaps ever given for a coin.

The ſilver coins of Syria, Dyrrhachium, Maſſilia,

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ſilia, Athens, and a few other ſtates are common; the drachmas and coins of leſſer ſize are worth about 5s. each; the didrachms, tetradrachms, &c. from 5s. to 10s. according to their ſize and beauty; the largeſt, *cæteris paribus*, being moſt valuable. The tetradrachms of cities, whoſe coins are common, are worth from 7s. 6d. to 21s.; but it is impoſſible to put a value upon the rare civic coins: Ten guineas have been given for a ſingle one.

The moſt rare of the *conſular* ROMAN *coins* are thoſe reſtored by Trajan: Of the others, the gold conſular coins are the moſt rare, and the ſilver the moſt common; excepting the coin of BRUTUS with the cap of Liberty, and a few others. Some of the Roman imperial coins are very ſcarce, particularly thoſe of OTHO in braſs; nor does his portrait occur at all on any coin ſtruck at Rome, owing to the ſhortneſs of his reign. His head upon the braſs coins of Egypt and Antioch is very badly executed, as well as all the other imperial coins of Greek cities. The beſt likeneſs is on his gold and ſilver coins; the latter of which are common. The Greek and Egyptian coins are all of ſmall or middling ſizes, and have various reverſes; thoſe of Antioch, as well as moſt of its other imperial coins, have Latin legends. They have no other reverſes but S. C. in a wreath, excepting in one or two of the large and middle braſs, where the inſcriptions are Greek. Latin coins of Otho in braſs, with figures on the reverſe, are reckoned falſe, though in the cabinet of D'Ennery at Paris there was an Otho in middle braſs, reſtored by Titus, which was eſteemed genuine by connoiſſeurs.

The *leaden* coins of Rome are very rare: Moſt of them are pieces ſtruck or caſt on occaſion of the Saturnalia; others are tickets for feſtivals and exhibitions. The tickets for theatres were made of lead, as were alſo the *contorniate*, perpetual tickets, like the Engliſh ſilver tickets for the opera. Leaden medallions are alſo found below the foundations of pillars and other public buildings, to perpetuate the memory of the founders. From the time of Auguſtus *leaden ſeals* were alſo uſed. A work of *Ticorini* on this ſubject, entitled *Piombi Antiochi*, is much recommended by Mr Pinkerton.

The Roman coins which have been blundered in the manner formerly mentioned, are very rare, and undeſervedly valued by connoiſſeurs. The blunders in the legends of theſe coins, which are probably the mere effects of accident, have been ſo far miſtaken by ſome medalliſts, as to have given life to imaginary emperors who never exiſted. A coin of Fauſtina, which has on the reverſe SOUSTI. S. C. puzzled all the German antiquaries, till Klotz ridiculed their inveſtigations by the following humorous interpretation: *Sine omni utilitate ſectamini tantas ineptias!*

As to the Roman *imperial* coins, ſome of thoſe which belong to the emperors whoſe coins are numerous, may yet be extremely valuable by having uncommon reverſes. Mr Pinkerton points out one of Auguſtus, with the legend C. MARIUS TROGVS, which is worth 3 guineas, though the ſilver coins of Auguſtus in general are not worth above 1s. In like manner the common gold coins of Trajan are not worth above 20s. while thoſe with BASILICA ULPIA, FORUM TRAJANI, DIVI NERVA ET TRAJANUS, PATER, DIVI NERVA ET PLATINA AUG. PROFECTIO AUG. REGNA ASSIGNATA, REX PARTHUS, and ſome others, draw from 3*l.* to 6*l.* The ticket medals belonging to the ſenate are worth from 3s. to 10s.

The ancient Roman ASSES are worth from 2s. to 8*l.* according to the ſingularity of their devices. The name of *weights*, given to the ancient Roman *aſſes*, is (ſays Mr Pinkerton,) exceedingly improper, as the Romans had weights of lead and braſs ſides, without the leaſt appearance of a portrait upon them. Theſe denote the weight by the number of knobs, and have likewiſe ſmall *fleurettes* engraved upon them. Whenever, therefore, (he adds) we meet with a piece of metal ſtamped on both ſides, with buſts and figures, we may lay it down as a certain rule, that it is a *coin*; but when ſlightly ornamented, and marked on one ſide only, we may with equal certainty conclude it to be a *weight*.

CONSULAR *gold* coins are worth from 20s. to 5*l.* Pompey with his ſons 21*l.* and the two Bruti 25*l.* The ſilver coins are univerſally worth from 1s. to 2s. 6d. excepting that of the cap of Liberty, and a few others, which, if genuine, will bring from 10s. to 5*l.* The *conſular* copper bears an equal price with the ſilver, but is more rare; the conſular ſilver *coins* reſtored by Trajan are worth 20s. each.

Of the coins of other nations, thoſe of HILDERIC, K. of the VANDALS, in ſilver, are worth 10s. the ſmall braſs of ATHANARIC, 5s.; the gold of THEODORIC, 40s.; the 2d braſs of Theodahat, 5s.; the 2d braſs of Baduela, being rare, are worth 10s.; the 3d braſs 3s. each. Coins and medals with unknown characters are always ſcarce and dear.

Ancient BRITISH coins are very rare, and worth from 10s. to 2 guineas each, ſometimes much more. The *heptarchic* coins of England are generally rare, except thoſe called STYCAS, which are very common, as well as thoſe of *Burgred*, K. of Mercia. The coins of ALFRED the Great with his buſt are ſcarce, and his other money much more ſo. Thoſe of *Hardy-Knute* are ſo rare, that it was denied they had any exiſtence; till Mr Pinkerton informed the public, that there are three in the Britiſh Muſeum, upon all of which the name HARTHECNUT is quite legible. Saxon pennies of the Heptarchy are rare, and worth from 10s. to *ten pounds*, according to their ſcarcity and preſervation. Coins of Edward the Confeſſor are pretty plentiful; others are rare, and worth from 10s. to 2 guineas; while two of Hardy Knute are worth no leſs than *ten guineas* each.

The coins of the ENGLISH monarchs after the conqueſt are common, except thoſe of Richard I. and John, not one of which is to be met with; though there are ſome French coins of Richard I. and Iriſh ones of K. John. "Leake," ſays Mr Pinkerton, "made a ſtrange blunder in aſcribing coins of different kings with 2 faces, and otherwiſe ſpoiled in the ſtamping, to Richard I.; in which, as uſual, he has been followed by a miſled number." The gold medals of Henry VIII. in 1545, and the coronation medals of Edward VI.

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are worth 20l. each; the Mary of Trezzo, 3l. Simon's head of Thurloe in gold, is worth 12l.; his oval medal in gold, upon Blake's naval victory, is worth 30l.; and his trial-piece, (says Pinkerton,) if sold, would bring a still higher price. The medals of Q. Anne, which are intrinsically worth 2½ guineas, sell at 3l. each; the silver, of the size of a crown, at 10s.: and the copper from 5s. to 10s. Daffier's copper pieces sell at from 2s. to 5s. and a few still higher.

The English coins struck in *Ireland* are of much the same value with those struck in England; but the St Patrick's halfpence and farthings are rather scarce, and the rare crown of white metal is worth 4l. The gun money of James II. and most other Irish coins, are very common.

The Scottish gold coins sell higher than the English, but the others are on a par. Coins of ALEXANDER I. and II. are rather scarce, but those of Alexander III. are pretty plentiful. Those of John Baliol are rare, and none of Edward Baliol are to be found. The shilling of Q. MARY, with her bust is rare, and sells for no less than 30l.; the half for 3l.; and the royal for 5 guineas. The French testoon of Francis and Mary brings *ten guineas*; and the Scottish one of Mary and Henry would bring 50l.; as would also the medal of James IV. The coronation medal of Francis and Mary is worth 20l. Briot's coronation medal sold, in 1755, for only two guineas at Dr Mead's sale, but would now bring 20l. if sold according to its rarity.

SECT. VIII. *Of the* ARRANGEMENT *of* COINS *and* MEDALS.

ONE of the principal uses of medals being the elucidation of ancient history, the arrangement of medals is the first thing that occurs in the formation of a cabinet. The most ancient medals extant are those of Alexander I. of Macedon, who began to reign about 501 years before Christ. The series ought, therefore, to begin with him, and to be succeeded by the medals of Sicily, Caria, Cyprus, Heraclea, and Pontus. Then follow Egypt, Syria, the Cimmerian Bosphorus, Thrace, Bithynia, Parthia, Armenia, Damascus, Cappadocia, Paphlagonia, Pergamus, Galatia, Cicilia, Sparta, Pæonia, Epirus, Illyricum, Gaul, and the Alps, including the space of time from Alexander the Great to the birth of Christ, which is to be accounted the third medallic series of ancient monarchs. The last series goes down to the 4th century, including some of the monarchs of Thrace, Bosphorus, and Parthia, with those of Comagene, Edessa or Osrhoene, Mauritania, and Judæa. A most distinct series is formed by the Roman emperors, from Julius Cæsar to the destruction of Rome by the Goths; nay, for a much longer period, were it not, that towards the latter part of it the coins become so barbarous as to destroy the beauty of the collection. Many series may be formed of modern potentates.

Medals likewise afford a good number of portraits of illustrious men; but they cannot easily be arranged in chronological order, so that a series of them is not to be expected. It is likewise vain to attempt the formation of a series of gods and goddesses to be found on ancient coins. Mr Pinkerton thinks it much better to arrange them under the several cities or kings whose names they bear. A collection of the portraits of illustrious men may likewise be formed from medals of modern date.

SECT. IX. *Of the* SYMBOLS *in* ANCIENT COINS *and* MEDALS.

THE *names* of the deities represented on the reverses of Greek coins are never expressed; perhaps, as Mr Pinkerton supposes, out of piety, a symbolical representation of their attributes being all that they thought proper to delineate; but the Roman coins always express the name, frequently with an adjunct, as VENERI VICTRICI, &c. In others, the name of the emperor or empress is added; as PUDICITIÆ AUGUSTÆ, round an image of Modesty; VIRTUS AUGUSTI, round an image of Virtue.

The pricipal symbols of the divine attributes to be met with on the Greek medals are as follow:

1. Jupiter is known on the coins of Alexander the Great, by his eagle and thunderbolts; but when the figure occurs only on the obverses of coins, he is distinguished by a laurel crown, and placid bearded countenance. Jupiter Ammon is known by the ram's horn twisting round his ear; a symbol of power and strength assumed by some of the successors of Alexander the Great, particularly by Lysimachus.

2. Neptune is known by his trident, dolphin, or being drawn by sea-horses; but he is seldom met with on the Grecian coins.

3. Apollo is distinguished by an harp, branch of laurel, or tripod; and sometimes by a bow and arrows. In the character of the Sun his head is surrounded with rays; but when the bust only occurs, he has a fair young face, and is crowned with laurel. He is frequent on the coins of the Syrian princes.

4. Mars is distinguished by his armour, and sometimes by a trophy on his shoulders. His head is armed with a helmet, and has a ferocious countenance.

5. Mercury is represented as a youth, with a small cap on his head, wings behind his ears, and on his feet. He is known by the cap, which resembles a small hat, and the wings. He appears also with the *caduceus*, or wand, twined with serpents, and the *marsupium*, or purse, which he holds in his hand.

6. Æsculapius is known by his bushy beard, and his leaning on a club with a serpent twisted round it. He sometimes occurs with his wife Hygeia or Health, with their son *Telesphorus* or Convalescence between them.

7. Bacchus is known by his crown of ivy or vine, his diadem and horn, with a tiger and satyrs around him.

8. The figure of Hercules is common on the coins of Alexander the Great, and has frequently been mistaken for that of the prince himself. He appears sometimes as a youth, and sometimes with a beard. He is known by the club, lion's skin, and remarkable apparent strength; sometimes he-

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he has a cup in his hand; and a POPLAR tree, as a ſymbol of vigour, is ſometimes added to the portrait.

9. The Egyptian Serapis is known by his buſhy beard, and a meaſure upon his head.

10. Apis is delineated in the form of a bull, with a flower of the lotos, the water lily of the Nile, ſuppoſed by Macrobius to be a ſymbol of creation; and Jamblichus tells us, that Oſiris was thought to have his throne in it.

11. Harpocrates, the god of ſilence, appears with his finger on his mouth; ſometimes with the ſiſtrum in his left hand: a ſymbol common to moſt of the Egyptian deities.

12. Canopus, another Egyptian deity, appears in the ſhape of a human head placed on a kind of pitcher. See CANOPUS.

13. The *Holy Senate* and *Holy People* appear frequently on Greek imperial coins, ſometimes repreſented as old men with beards, on others as youths.

The goddeſſes repreſented on medals are,

1. Juno, repreſented by a beautiful young woman, ſometimes with a diadem, ſometimes without any badge, which is reckoned a ſufficient diſtinction, as the other goddeſſes all wear badges. Sometimes ſhe appears as the goddeſs of marriage; and is then veiled to the middle, and ſometimes to the toes. She is known by the peacock, a bird ſacred to her from the fable of Argus.

2. Minerva is very common on the coins of Alexander the Great; and her buſt has been miſtaken by the celebrated painter Le Brun, for the hero himſelf. Her ſymbols are, her armour; the ſpear in her right hand, and the ægis with a Meduſa's head in her left; an owl commonly ſtanding by her.

3. Diana of Epheſus is commonly repreſented on the Greek imperial coins; and appears with a great number of breaſts, ſuppoſed to denote univerſal Nature. She is ſupported by two deer, and carries a pannier of fruit upon her head. The buſt of this goddeſs is known by the creſcent on her brow, and ſometimes by the bow and quiver at her ſide.

4. Venus is known by an apple, the prize of beauty, in her hand. Sometimes ſhe is diſtinguiſhed only by her total want of dreſs; but is always to be known by her extraordinary beauty, and is ſometimes adorned with pearls about the neck.

5. Cupid is ſometimes met with on the Syrian coins, and is known by his infancy and wings.

6. Cybele is known by a turreted crown and lion: or is ſeen in a chariot drawn by lions.

7. Ceres is known by her garland of wheat, and is common on the Sicilian coins; that iſland being remarkable for its fertility. Sometimes ſhe has two ſerpents by her, or is drawn in a chariot by them. She carries in her hands the torches, as if in ſearch of her daughter Proſerpine.

8. Proſerpine herſelf is ſometimes met with on coins with the name of κορη, or the *girl*.

9. The Egyptian Iſis has a bud or flower on her head; a ſymbol of the perpetual bloom of the inhabitants of heaven. She carries alſo a ſiſtrum in her hand.

10. The Sidonian Aſtarte appears on a globe ſupported on a chariot with two wheels, and drawn by two horſes.

Theſe are the deities moſt commonly repreſented on the Greek coins. The more uncommon are, Saturn with his ſcythe, or with a hook on the Heraclean coins; Vulcan with his tongs, on the reverſe of a coin of Thyatira, repreſented at work in the preſence of Minerva. Adranus, a Sicilian god, is ſometimes repreſented on coins with a dog. Anubis, an Egyptian deity, has a dog's head. Atis is known by his Phrygian bonnet; Caſtor and Pollux by a ſtar on the head of each; Pluto, by his old face, diſhevelled hair and beard, and a hook; Flora, by a crown of flowers; Nemeſis by her wheel; and Pan by his horns and ears of a beaſt.

There are likewiſe to be found on medals many different SYMBOLS by themſelves; of which we ſubjoin a liſt, with their SIGNIFICATIONS:

1. *Vaſes* with ſprigs, ſignify Solemn games. 2. *Small cheſt* or hamper, with a *ſerpent leaping out*, Myſtic rites of Bacchus. 3. *Anchor*, on Seleucian medals, Coin ſtruck at Antioch, where an anchor was dug up. 4. *Apollo* on Syrian coins, on an *inverted hamper*, Covered tripod. 5. *A Bee*, Ariſteus, the ſon of Apollo. 6. *Laurel*, Apollo. 7. *Reed*, A river. 8. *Ivy and grapes*, Bacchus. 9. *Poppy*, Ceres and Proſerpine. 10. *Corn*, Ceres. 11. *Owl and olive*, Minerva. 12. *Dove*, Venus. 13. *Torch*, Diana, Ceres, or Proſerpine. 14. *Mudnis*, or *conic ſtone*, The Sun, Belus, or Venus. 15. *Pomegranate flowers*, Rhodes. 16. *Owl*, Athens. 17. *Pegaſus*, Corinth. 18. *Wolf's head*, Argos. 19. *Bull's head*, Bœotia. 20. *Minotaur's* head and *labyrinth*, Crete. 21. *Horſe's head*, Pharſalia. 22. *Lion*, Marſeilles. 23. *Tortoiſe*, Peloponneſus. 24. *Sphinx*, Scio. 25. *Three legs joined*, (as in the Iſle of Man-money,) Sicily. 26. *Horſe*, Theſſaly. 27. The *creſcent*, Byzantium. 28. *Bull*, Suppoſed to be a river. 29. *Enſign*, with the letters COL. A colony drawn from one legion. 30. *Bull*, Apis, ſtrength or ſecurity. 31. *Caduceus*, Peace and concord. 32. *Cornucopia*, Abundance. 33. *Pontifical hat*, Prieſthood. 34. *Parazonium*, Baton of command. 35. *Globe* on an altar with *three ſtars*, The world preſerved by the gods for the three ſons of Conſtantine I. 36. *Fort and gate*, Security. 37. *Tribuli*, a kind of *chevaux de frize*, Unknown. 38. *Altar* or *tripod*, Piety. 39. *Dolphin*, Apollo. 40. *Leciſternia*, Feſtivals. 41. *Lituus*, or *twiſted wand*, Auguriſhip. 42. *Apex*, or *cap with ſtrings*, Pontificate. 43. *Thenſa*, or *chariot* employed to carry *images*, Conſecration of an empreſs. 44. *Peacock*, Ditto. 45. *Eagle*, Conſecration of an emperor.

SECT. X. *Of* MEDALLIONS, MEDALLETS, *&c.*

BESIDES the ordinary coins of the ancients, which paſſed in common circulation, there were others of a larger ſize, which are now termed *medallions*. Theſe were ſtruck on the commencement of the reign of a new emperor and other ſolemn occaſions; frequently alſo, by the Greeks in particular, as monuments of gratitude or of flattery. Sometimes they were mere trial or pattern pieces; and thoſe abound after the time of Maximian, with the words *Tres Monetæ* on the reverſe. The common opinion is, that all the Roman

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Roman pieces of gold exceeding the denarius aureus, all in silver exceeding the denarius, and all in brass exceeding the sestertius, went under the denomination of *medallions:* but Mr Pinkerton thinks that many of these large pieces went in circulation, though not very commonly, as our five and two guinea pieces, silver crowns, &c. do in this country. The finest medallions were presented by the mint-masters to the emperor, and by the emperor to his friends, as specimens of fine workmanship. The best we have at present are of brass, and many of them composed of two sorts of metal; the centre being copper, with a ring of brass around it, or the contrary; and the inscription is sometimes confined to one of the metals, sometimes not. There is a remarkable difference between the Greek and Roman medallions in point of thickness; the latter being frequently three or four lines thick, while the other seldom exceed one. Very few medallions, however, were struck by the Greeks before the time of the Roman emperors; but the Greek medallions of the emperors are more numerous than those of the Romans themselves. All these pieces, however, are of such high prices, that few private persons are able to purchase them. In the 17th century, Christina queen of Sweden procured about 300. In the late king of France's collection, there were 1200; a number formerly supposed not to exist; but Dr Hunter's collection contains about 100, exclusive of the Egyptian.

Besides these large pieces, there are smaller ones of a size somewhat larger than our half-crowns; and by Italian medallists are called *medaglion cini*, or small medallions. They are still scarcer than the large kind.

There is still a 3d kind, which have almost escaped the notice of medallists, viz. the small coins or *missilia* scattered among the people on solemn occasions; such as those struck for the slaves on account of the Saturnalia; counters for gaming; tickets for baths and feasts; tokens in copper and in lead, &c. These are distinguished by Mr Pinkerton by the name of *medallets*. Many, or perhaps almost all, of those struck for the Saturnalia were satirical; as the slaves had then a licence to ridicule not only their masters, but any person. Mr Pinkerton mentions one of the most common pieces of this kind, which has on the obverse the head of an old woman veiled, with a laurel crown; the reverse only S. C. within a wreath.

A fourth class of medals are called *contorniati*, from the Italian *contorniato*, encircled; because of the hollow circle which commonly runs around them. They are distinguished from medallions by their thinness, faint relief, reverses sometimes in relief, sometimes hollow; and in general by the inferiority in their workmanship. The opinions of medallists concerning these pieces are very various: some suppose them to have been struck by Gallienus to the memory of illustrious men and celebrated *athletæ*, at the time that he caused all the consecration coins of his predecessors to be restored; others ascribe their invention to Greece, &c. but Mr Pinkerton is of opinion that they were only tickets for places at public games. Many of them, notwithstanding their inferior workmanship, are very valuable, on account of their preserving the portraits of some illustrious authors of antiquity no where else to be found, though some think much dependance cannot be put on them. They, however, are valuable, as being ancient, and perhaps traditional portraits of these great men.

SECT. XI. DIRECTIONS *for* MAKING CABINETS.

As the formation of a cabinet must be attended with very considerable expence, it is necessary for every one who attempts this, to proportion it to his circumstances. There are, properly speaking, three kinds of cabinets. I. Those meant to contain a coin of every sort that has been issued from the mint in every age and country: but this, which may be called the large and complete cabinet, is not to be accomplished by private persons. That of Dr Hunter is perhaps one of the best private cabinets ever known, and cost 23,000l.; but as many duplicates were sold as cost 2000l.; by which means the expence was reduced to 21,000l. The vast collection made by the king of France cost upwards of 100,000l. The smaller cabinet may be supposed to consist only of middle and small Roman brass, English pennies, groats, &c. with a few medals of the more valuable kind, and may be supposed to incur an expence of from 200l. to 1000l. The smallest kind is called a *casket* of medals, and does not consist of above 1000 at most of various kinds; and consequently the expence must depend on the pleasure of the proprietor.

The arrangement of a grand cabinet, according to Mr Pinkerton, is as follows;

"I. The coins of cities and of free states in alphabetical order; whether using Greek, Roman, Punic, Etruscan, or Spanish characters. II. Kings in chronological series, both as to foundation of empire and seniority of reign. III. Heroes, heroines, founders of empires and cities. IV. Other illustrious persons. V. Roman asses. VI. Coins of families, commonly called consular. VII. Imperial medallions. VIII. Imperial gold. IX. Imperial *minimi* of all metals. X. Imperial silver. XI. Imperial first brass. XII. Second brass. XIII. Third brass. XIV. Colonial coins, which are all of brass. XV. Greek cities under the emperors, of all metals and sizes. In a smaller cabinet they may be put with the Roman, according to their metal and size. Those without the emperor's head go to I. though struck in Roman times. XVI. Egyptian coins struck under the Roman emperors, of all metals, and sizes. They are mostly of a base metal, called by the French PATIN, a kind of brittle brass. XVII. Contorniati, or ticket medals. XVIII. Coins of Gothic princes, &c. inscribed with Roman characters. XIX. Coins of southern nations using uncommon alphabets; as the Persian, Punic, Etruscan, and Spanish. XX. Coins of northern nations using uncommon characters, as the Punic and German.

"In the modern part no series can be formed of copper that will go back above two centuries; but *sequences* (chronological series) of gold and silver

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silver may be arranged of all the different empires, kingdoms, and states, as far as their several coinages will allow. Those of England and France will be the most perfect. Modern silver is commonly arranged in three sequences; the dollar, the groat, and the penny sizes. The medals of each modern country ought of course to be separated; though it is best to arrange each set in chronological order, let their size of metal be what it will."

These directions likewise apply to the formation of a cabinet of the second kind: but if the collector means to form a series of large Roman brass, he will find the coins of four or five emperors so scarce as not to be attainable in that series, at any price. He must therefore supply their places with middle brass, as is allowed with regard to Otho, even in the best cabinets, there not being above three coins of that emperor in large brass known in the world; whereas of the middle brass two or three hundred may exist. For this reason Mr Pinkerton concludes, that in cabinets of the second class, the collector may mingle the large and second brass together as he thinks proper, in order to save expense; though it would not do so well to unite such disproportionate sizes as the large and small. "In the small sequences, however (says he), there can be no more harm in his mixing gold, silver, and brass, as chance or curiosity may lead him to purchase any of these. In short, the collector has no rules but in the Greek cities and Roman families, to observe alphabetical order and chronology in every thing else."

SECT. XII. TABLES *of* ANCIENT *and* MODERN COINS.

THE most ancient coins, according to Froelich, are distinguished by the following marks, which he accounts infallible: 1. Their oval circumference and globulous swelling shape. 2. Antiquity of alphabet. 3. The characters being retrograde, or the first division of the legend in the common style, while the next is retrograde. 4. The indented square already described. 5. The simple structure of the mintage. 6. Some of the very old coins are hollowed on the reverse, with the image impressed on the front. 7. The dress, symbols, &c. frequently of the rudest design and execution.

TABLE I. ANCIENT GREEK COINS.

1. Those without impression.

2. With one or more hollow indented marks on one side, and an impression in relief on the other.—Of Calcedon on the Hellespont, Lesbos, Abdera in Thrace, Acauchus in Macedon, those said to belong to Ægium in Achaia. This class continues from about 900 to 700 B. C.

3. With an indented square divided into segments, having a small figure in one of them; the rest blank, with a figure in relief on the obverse.—Of Syracuse and other places adjacent. Continue from 700 to 600 B. C.

4. Coins hollow on the reverse, with figures in relief on the obverse.—Of Caulonia, Crotona, Metapontum, &c. Supposed by some to be a local coinage of Magna Græcia; but probably of equal antiquity with the former.

5. Coins in which a square die is used on one or both sides.—Of Athens, Cyrene, Argos, &c.—Of Alexander I. and Archelaus I. of Macedon. Disused in the reign of the latter, about A. A. C. 420.

6. Complete coins, both in obverse and reverse, occur first in Sicily in the time of Gelo, about A. A. C. 491.

7. Coins of Alexander the Great and his successors. About the time of this hero the Greek coins began to attain to perfection, and were struck of uncommon beauty. It is remarkable, that on the coins of this monarch his own image seldom occurs. After his death many coins bear his portrait. Trebellius Pollio informs us, that some coins, particularly those of Alexander, used to be worn as amulets; and many medals are met with in cabinets bored seemingly with that intention.

8. Coins of the successors of Alexander.—Those of the Syrian monarchs almost equal the coins of Alexander himself in beauty. Those of Antiochus VI. are supposed to be the most perfect patterns of male beauty to be met with anywhere. The Egyptian Ptolemies are somewhat inferior.

9. The coins of the Arsacidæ of Parthia, done by Greek workmen.

10. The Greek imperial coins being such as have the head of an emperor or empress; such as have not these impressions being classed with the civic coins, though struck under the Roman power. None of the imperial coins occur in gold. Of silver there are those of Antioch, Tyre, Sidon, Tarsus, Berytus, Cæsarea. Egyptian silver coins of base metal. Syrian silver coins, which sometimes bear on the reverse the club of Hercules, or the Tyrian shell-fish. Those of Sidon bear the image of the goddess Astarte, or her chariot. Those of Cæsarea in Cappadocia are better work than the Syrian. Lycian coins of good workmanship: on the reverse two harps, and an owl sitting upon them. Silver coins of Gelon in Sarmatia, resembling the Syrian. The situation of this town is very much unknown. It seems to have been situated on the north of the Euxine sea, where some Sarmatic or Sclavonic tribes were mingled with the Scythians or Goths. The Greek imperial brass coins are very numerous. A series of almost all the emperors may be had from those of Antioch, with a Latin legend on the obverse and Greek on the reverse. Those of Bithynia and Phrygia are remarkable for good workmanship. The coins of Tarsus, remarkable for their curious views of objects, almost in perspective. The Egyptian coins, from Augustus to Nero, are worse executed than afterwards. From Nero to Commodus they are often of admirable workmanship, and in a peculiar style, distinct both from the Greek and Roman. From the time of Commodus, the Egyptian brass coins of the Roman period are likewise of excellent workmanship, especially in the time of Antoninus Pius.

TABLE II. ANCIENT ROMAN COINS.

I. The CONSULAR COINS, called also the coins of families, and arranged alphabetically in cabinets,

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nets, according to the names of the families which appear on them. They are,

1. *Braſs Coins.*—Theſe conſiſt chiefly of large pieces, of rude workmanſhip, without any intereſting imagery. In cabinets they are generally kept in boxes apart by themſelves. The as bears the head of Janus; the ſemis, of Jupiter, with S; the triens, of Minerva, with four cyphers; the quadrans, of Hercules, with three cyphers; the ſextans, of Mercury, with two cyphers; and the uncia bears the head of Rome, with one cypher. In all theſe pieces the prow of a ſhip is conſtantly the figure on the reverſe, with very few exceptions. Sometimes, indeed, they have a ſhell, two heads of barley, a frog, an anchor, or a dog, on the reverſe. About the time of Julius Cæſar, both the obverſes and the reverſes of the coins began to be altered.

2. *Silver.*—Of this the denarius was the firſt and principal coin. It was ſtamped originally with X, denoting that the value was ten aſſes. On the reverſe was Caſtor and Pollux, or a chariot of Victory. Afterwards the buſts of various deities appear; and in the 7th century of Rome the portraits of illuſtrious perſons deceaſed are met with: but till the time of Julius Cæſar no figure of any living perſon is to be met with; Julius himſelf being the firſt who aſſumed that honour. The workmanſhip on the beſt and worſt ſilver is much the ſame. The reverſes are very curious, and point out many remarkable events in Roman hiſtory; but none of theſe occur till about a century before the Chriſtian era. The large denarii, with ROMA, are the moſt ancient; and ſome of theſe bear the Pelaſgic A, not the Roman. The ſilver ſeſtertii have a head of Mercury, with a caduceus on the reverſe. The quinarii have always a head of Jupiter, with a Victory on the reverſe.

3. *Gold.*—Moſt of theſe are of great value. The number of theſe exceeds not 100; thoſe of braſs 200; and of ſilver 2000. The aureus is the general gold coin; but two or three gold ſemiſſes of families likewiſe occur.

II. ROMAN IMPERIAL COINS. 1. *Braſs.*—This is of three ſizes; large, middle, and ſmall. The firſt forms a moſt beautiful ſeries, but very expenſive. The various colours of the patina have the fineſt effect. It is the moſt important of all the Roman coins, and exceeds even the gold in value.

The middle braſs is next in value to the former; and in it are many rare and curious coins, particularly intereſting to Britons, as elucidating the hiſtory of the iſland.

The ſmall braſs ſeries abounds alſo with curious coins. They are ſcarce till the time of Valerian and Gallienus, but very common afterwards. Mr Pinkerton recommends, therefore, to form a ſeries in ſilver as well as braſs; both being the cheapeſt of all the Roman coins. "In this ſeries (ſays he) it is a common fault to arrange many coins which have been plated with gold or ſilver, the forgeries of ancient times, but which time has worn off, either wholly or in part. All real braſs coins have the S. C. till the time of Gallienus; as the ſenate alone had the power of ſtriking braſs, while the emperor himſelf had that of gold and ſilver. When the S. C. therefore is wanting, the coin was certainly once plated; as, in general, the different type and fabric, being thoſe of gold and ſilver, ſufficiently ſhow themſelves. With Pertinax, A. D. 192, there is a temporary ceſſation of ſmall braſs; nor after him do any princes occur in that ſeries till Valerian, A. D. 254, excepting Trajanus Decius, A. D. 250 only. After Valerian the ſeries is continuous and common. The braſs coinage gradually declined in ſize from the time of Severus; ſo that parts of the as could not be ſtruck, or at leaſt it was held unneceſſary to ſtrike them. Trajanus Decius attempted in vain to reſtore the coinage; and Valerian and Gallienus were forced to iſſue denarii ærei and ſmall aſſaria. The ſeries of large and of middle braſs are of two fixed and known ſizes; the former about that of our crown, the latter of the half crown: though after Severus they gradually leſſen. But the ſmall braſs takes in all parts of the as; and every braſs coin not larger than our ſhilling belongs to this ſeries.

The *minimi*, indeed, or very ſmalleſt, it is proper to keep apart. The coins of Julius Cæſar in this ſize are of peculiar fine workmanſhip. They bear his portrait reverſe of Auguſtus, or the reverſe has a crocodile, EGYPTO CAPTA. There are ſeveral with Mark Antony, and ſome with Cleopatra; but the more common pieces are thoſe with only numerals on the obverſe, which go the length of XIII.; probably tickets for the baths. From the time of Nero to that of Veſpaſian, no ſmall braſs occurs; but there are many of the latter, and of his ſon Titus; while Domitian has as many as Nero, and Domitia his wife almoſt as many. Succeeding emperors to Pertinax have alſo many braſs coins; but from his time to that of Valerian there are no real ſmall braſs, excepting thoſe of Trajanus Decius. After Gallienus there are many coins of this kind; and Mr Pinkerton mentions one in Dr Hunter's cabinet, of an unknown perſon named *Nigrianus*. The coin ſeems to have been ſtruck at Carthage; and our author concludes that he was an African uſurper, father to Nigrinianus.

2. *Silver.* This ſeries is very complete, and the cheapeſt of any, eſpecially as the ſmall braſs becomes a fine ſupplement to it; the latter being had in plenty when the ſilver becomes ſcarce, and the ſilver being plentiful when the braſs is ſcarce.

3. *Gold.* The Roman imperial gold coins form a ſeries of great beauty and perfection; but, on account of their great price, are beyond the purchaſe of private perſons.

4. *The colonial coins* occur only in braſs; none, excepting that of Nemauſus, having a right to coin ſilver. They begin in Spain with Julius Cæſar and Antony, and ceaſe with Caligula, who took away the privilege of coinage from the Spaniſh colonies. The moſt beautiful are thoſe of Corinth. The other remarkable colonial coins are thoſe of Emerita, Ilice, Terraco, Caſſandria, Babba, Berytus, Cæſarea, Patræ, Emiſa, Heliopolis or Balbec, Ptolemais, Sidon, Tyre, Deulton, Diom, Troas, Rheſania, Neapolis of Samaria, which bears a repreſentation of Mount Gerizzim with the temple on it, Hippo in Africa, &c. Of many of theſe coins we meet with fine repreſentations of temples, triumphal arches, gods, goddeſſes, and illuſtrious perſons. But coins with thoſe

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those representations are by no means common; the colonial coins till the time of Trajan bearing only a plough, or some other simple badge of a colony. Camelodunum is the only colony in Britain of which we have any coins.

5. The *minimi*. This includes the smallest coins of all denominations, most of them do not exceed the size of a silver penny. They are the most curious of all; but no series of them was ever formed by any person except the Abbe Rothelin, whose collection formed of all metals passed to the queen of Spain. The reason of the scarcity of these small coins is probably their diminutive size; by which they are mostly lost.

Numbers of Roman coins are found in all countries once subject to that powerful people. Some have been met with in the Orkneys, and many in the most remote parts of Europe, Asia, and Africa, known to the ancients.

TABLE III. COINS *of other* ANCIENT NATIONS.

1. The Lydians appear to have invented coinage; though perhaps this, honour may be disputed with them by the Greeks.

2. The Assyrians, Medes, Babylonians, Phœnicians, and Egyptians, had no coins. In the mouths of the mummies are only thin, unstamped, and round pieces of gold to pay Charon's fare.

3. No Indian or Chinese coins are to be met with till a very late period; and then so rude as scarce to be worth notice. Voltaire mentions a collection of ancient Chinese and Indian coins made by the emperor of China in 1700; but Mr Pinkerton supposes it to have consisted only of the Greek and Roman money which had been introduced into these countries.

4. The Lydian coins have no legends; so that mere conjecture only determines the ancient coins of electrum and silver found in Asia, and different from the Persian, to belong to Lydia. Crœsus coined gold into a form which he called *staters*; and Mr Pinkerton mentions a very ancient gold coin in Dr Hunter's cabinet, which he supposes to have been one of these. It has a globous figure, with indented marks on one side, and on the other a man kneeling, with a fish held out in the left hand, and a sword depending in the right. It weighs four drachms, which Josephus tells us was the weight of the Lydian gold coins. In the same collection are other gold coins little inferior in antiquity; the most ancient of which, our author supposes, may have been coined by the cities of Asia Minor, as coinage passed through them to Greece. They are of admirable workmanship, and as much superior to the best Sicilian coins as the latter are to all the rest in the world. These gold coins are all extremely pale; owing to the want of knowledge in refining gold.

5. PERSIAN coins. These were first struck by Darius Hystaspes, whence they had the name of DARICS. They are of gold, and generally have the figure of an archer: they weigh about four drachms; and some occur with the indented mark on one side, while others have figures upon both. The silver coins have generally a king in a chariot of two horses, with a charioteer, and sometimes another figure on foot behind on the obverse; while the reverse presents a ship, sometimes a ram, bull, or other animal. The gold coins, which only had the title of *Darics*, are extremely scarce, having been melted down, as is supposed, and recoined by Alexander the Great on his conquest of Asia.

There is a 2d series of Persian coins beginning with Artaxares or Artaxerxes, who overthrew the Parthian monarchy about A. D. 210. These are large and thin, with the king's bust on one side and the altar of Mithras on the other; generally with a human figure on each side. These coins continue till A. D. 636, when Persia was conquered by the Saracens. They have only Persian letters upon them, which have never been explained by any antiquaries. Mr Pinkerton says that they seem to partake of the ancient Greek, Gothic, and Alanic.

6. The HEBREW shekels, originally didrachms, but after the time of the Maccabees tetradrachms, are almost all forgeries of modern Jews, as well as the brass coins with Samaritan characters upon them. They have all a sprig upon one side and a vase on the other. Mr Pinkerton says, that the admission of one of them into a cabinet would almost be a disgrace to it.

7. PHOENICIAN and PUNIC coins are very interesting on account of the great power and wealth of these nations. The alphabets have been cleared by their relation to the Hebrew and Syriac languages.

8. The coins of PALMYRA come under the same denomination with the former, Palmyra being a Syrian city.

9. The ETRUSCAN coins have the characters of that nation, which have been explained by their affinity to the Pelasgic, or oldest Greek and Latin.

10. The SPANISH coins are inscribed with two or three alphabets allied to the old Greek or Punic; but the inscriptions have not been sufficiently explained.

11. GAULISH coins. These are numerous; but the most ancient have no legends; and even after the Greek letters were introduced into Gaul by a colony at Marseilles, the legends are very difficult to be explained.

12. BRITISH coins. From a passage in Cæsar's Commentaries, it has been inferred, that the Britons used some kind of coins even in his time. Mr Pinkerton informs us, that some rude coins of copper very much mingled with tin are frequently found in England; which, he supposes, may be some of the ancient British money. They are of the size of a didrachm, the common form of the numnus aureus among the ancients. After the time of Cæsar, coinage increased among the Britons; and there are many found of Cunobelinus mentioned in the Roman history. Most of these have on one side CUNO, with an ear of wheat, a horse, a kind of head of Janus, or other symbol; and have frequently also the letters CAMU; supposed to mean Camelodunum. Sometimes the word TASCIA occurs; the meaning of which has not yet been explained.

13. GOTHIC coins of France, Italy, and Spain, to the time of Charles the Great, have the Roman

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characters upon them. The Italian coins are moſtly of the ſize of ſmall braſs; and in this way we meet with coins of Athalaric, Theodahat, Witiges, and other Gothic princes. Many others occur, the inſcriptions of which, though meant for Roman, are ſo perverted as to be illegible.

TABLE IV. MODERN COINS.

1. OF JAPAN. Theſe are thin plates of gold and ſilver, of an oval figure, with ſmall marks or figures ſtamped on them.

2. CHINA. Theſe are only copper, about the ſize of a farthing, with a ſquare hole in the middle to put them on ſtrings. The inſcriptions on them do not expreſs the name of the ſovereign, but the year of his reign; as the *happy year*, the *illuſtrious year*, &c.

3. The TARTARIAN coins are rude, having only inſcriptions upon them; and they are all poſterior to the time of Jenghiz khan.

4 Coins of THIBET, Pegu, and Siam, are much the ſame, preſenting only inſcriptions without any figures. They are alſo of late date.

5. INDIA. Some old coins have been found in the neighbourhood of Calcutta, of gold, ſilver, copper, and tin, all mixed together. Theſe have commonly a warrior with a ſword on one ſide, and an Indian female idol on the other; of the ſame form with the celebrated ſculptures in the iſland of Elephanta, but it is impoſſible to tell what antiquity they are of. The modern coins are the pagoda of gold, worth little more than 6s.; the rupee of ſilver, upwards of 2s.; and the caſh, of copper. There is a remarkable ſet of rupees, which ſhow the 12 ſigns; a lion on one, a bull on another, &c.; but the occaſion on which they were ſtruck is unknown. The other coins of India have generally Perſian inſcriptions.

6. PERSIA. The Perſic coins ſince its conqueſt by the Arabs continue on the Arabian models.

7. ARABIA. Some of the coins of the petty princes of Arabia are met with as old as the imperial ages of Rome; but till the time of Haroun Alraſhid, no regular coinage appears in the vaſt empire of the Saracens. Even then the reverſe has only an inſcription, and the obverſe is copied from any Greek or Syrian coin which happened to fall in the moneyer's way. The later Arabian coins are moſtly ſilver, with the name and titles of the prince on one ſide, and ſome inſcription from the Koran on the other. The more modern coins of this country are in the ſhape of a fiſh-hook with Arabic inſcriptions.

8. TURKEY. No regular coinage was formed by the Turks till they became maſters of Conſtantinople. They reſemble thoſe of Perſia and Arabia, having merely inſcriptions on both ſides.

9. The coins of the AFRICAN ſtates, at leaſt ſuch as profeſs the Mohammedan religion, have merely inſcriptions without any figures: thoſe of the internal parts are unknown; and no coinage was uſed among the Mexicans and Peruvians, the only civilized nations in America; but La Hontan mentions an American ſavage who had a ſquare medal of copper depending from his neck. Mr Pinkerton ſuppoſes it to have come from Japan.

10. Modern ITALIC coins. Beſides the Gothic pieces mentioned in the former table, the exarchs of Ravenna coined money with the inſcription of FELIX RAVENNA, &c. The Lombards iſſued no coins, but there are ſome ſtill extant of Charlemagne. The following liſt ſhows the origin of the coinage in various Italian ſtates.

ROME. Papal coinage originates with Hadrian I. Size of ſilver pennies, with the Pope's name on one ſide, and the SCUS PETRUS on the other. No coins appear from 975 to 1099, excepting of Leo IX. In 1303 appear pennies of the ſenate and people of Rome, with Peter on the one ſide and Paul on the other. There are groats of Clement V. with his portrait three quarters length; but the ſide head begins with Sixtus V. in 1470. Gold was firſt coined by John XXII. in 1316. The coins of Alexander VI. Julius II. and Leo X. are remarkable for beauty and elegance.

MILAN. Coinage began with Charlemagne. The firſt coin of the family of Viſconti occurs in 1330, under Azo. The ſet finiſhes with Lewis XII.

NAPLES. Coinage begins in 840 and 880, with duke Sergius and biſhop Athanaſius. The next coins are of Roger of Sicily, and Roger II. in 1130, William I. II. and Tancred. Naples and Sicily were ſubdued in 1194 by the emperor of Germany; in 1255 Manfred appears; in 1266 Charles of Provence; and others till Joan in 1414: after which follow the houſe of Arragon, and later kings.

VENICE begins in the 10th century. The firſt coins are ſilver pennies marked VENECI. Then follow the coins of Henrico Dandulo in 1192, of Ziani in 1205, &c. Gold was firſt coined at Venice in 1280, and copper in 1471; but the ſilver groats are as old as 1192.

FLORENCE. Silver was coined here in the 12th century or before; but in 1252 the firſt gold coins ſtruck in Europe after the 8th century made their appearance, and were named *florins* from the flower of the lily upon them. They were imitated by the popes, by France, and England. They have on one ſide St John the Baptiſt ſtanding, on the other a large *fleur de lis*, and it is not doubted that the French *fleur de lis* took their origin from theſe coins. They weigh a drachm, and are no leſs than 24 carats fine, according to Italian writers, and are worth about 12 ſhillings.

GENEVA firſt began to coin money in 1129, under the government of Conrad. Thoſe of the dukes of Savoy began in the ſame century.

AQUILEIA. Coins were iſſued from this city by the patriarchs from 1204 to 1440.

FERRARA. Coins of the marquiſes from 1340.

11. FRENCH coins. During the race of Clovis, from 490 till 751, the coins are chiefly gold *trientes*, with ſome *ſolidi* and *ſemiſſes*. The former are of good workmanſhip, with the heads of kings. The reverſe has a croſs with the name of the town where they were ſtruck.

The coins of the ſecond race began with Pepin in 751, and continue till Hugh Capet in 978. The coins of the firſt race are elegant, but thoſe of the ſecond quite the reverſe, being almoſt all ſilver pennies, and ſeldom bearing the portait of the king. Thoſe of Charlemagne have only CAROLUS in the field; while the reverſe bears R. F. or ſome ſuch

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such inscription; though one piece struck at Rome has a rude bust of him. The coins of Lewis le Debonnaire are better done.

The third race begins with Hugh Capet in 987, and extends to this time. The coinage did not begin to improve till 1226 under St Lewis, when the groat appears. Its name in Italian is *grosso*, in French *grosse*, in English *groat*, or great coin; so called from its size in comparison with the penny; and it passed from Italy to France, to Germany, and to England. After the conquest of France by the English, base coins of many kinds were introduced; and in the year 1574, in the time of Henry III. copper was first introduced into the French coinage. Besides these, the other remarkable coins of France are, the blancs or billon groats, first issued in 1348; the *ecus à la couronne*, or crowns of gold, so called from the crown on one side, and begun by Charles VI. in 1384; those of Ann of Bretagne in 1498: the *teston*, or piece with the king's head, of Lewis XII.; the *Henri* of Henry II. with Gaul sitting in armour, and a Victory in her hand. There are many coins of cardinal Bourbon, elected king in 1589; and in 1642, Lewis XIV. takes the title of CATALONIÆ PRINCEPS. The first *louis d'or* made its appearance in 1640; but such was the poverty of France, if we believe certain authors, that in 1719 the duke of Orleans regent struck copper for silver.

12. Spanish coins. The most early series of these consist almost entirely of trientes, finely done. On one side they have the head of the king with his name, and on the other a cross, with the name of the town, commonly in Bœtica, or the south part of Spain, where there were very many Roman colonies, and which was fertile to a proverb. The Moresque coins of Spain, like those of the rest of the Mohammedan states, present us only with insipid inscriptions on both sides. Indeed the Mohammedan religion, by its absolute refusal to allow the representation of any living creature, has prevented the progress of coinage in any degree throughout those regions which it has overspread. The inscriptions on the ancient Spanish coins are in the Cufic or old Arabic characters.

13. Portugal. No description of the coins of this kingdom has yet appeared.

14. Germany. No account of the German coins has been published; though it is well known that not only the emperors, but many of the cities, particularly those called *Hanse towns*, issued money; and many of the coins issued by the cities were superior in elegance even to those issued by the emperors.

15. Denmark. Here the coinage begins with Canute the Great in 1014. The pieces are at first extremely rude, ornamented only with rings and Runic characters. These are succeeded by copper pieces, some of which have a cross, others a pastoral staff on one side, with the letter A on the other. Later coins have strokes IIII, &c. all round them; but those of Harold, Hardicanute, and Magnus Bonus, in 1041, are of neat workmanship, and have the portraits of the princes at half-length. The coins of Nicholas or Niel, as he is called by the Danes, are rude, as well as those of Waldemar I. and the celebrated Margaret. In 1376, Olaf caused money to be struck with a grinning full face, with a crowned O upon the other side. "The Swedes (says Mr Pinkerton) took these coins extremely ill, as they thought they grinned at them." Silver was first coined in Denmark by Philippa queen of Eric, and daughter to Henry IV. of England.

16. Sweden. The coinage of this kingdom began in 818 under Biorno, on the plan of Charlemagne. These coins are marked with a cross. Next follow those of Olaf, in 1019; which Mr Pinkerton supposes to have been the first true Swedish coins; and that the art of coinage first passed from England into Denmark in the time of Canute the Great, and from Denmark into Sweden. These coins were struck on the English model. During the time that Sweden was subject to Denmark, or miserably harassed by the Danes, the coins of both kingdoms were the same; but after the time of Gustavus Vasa many elegant pieces appear. In 1634, dollars were coined, with the portrait of Gustavus Adolphus, who was killed two years before: On the reverse they have the arms of Sweden, with the chemical marks of mercury and sulphur. In 1716, 1717, and 1718, Charles XII. being in extreme want of money, issued small copper coins with Saturn, Jupiter, Mars, &c. upon them, to go for dollars; and on account of this scheme, Baron Goertz, the suggester of it, was brought to the block.

17. Norway. The coins of this country begin with Olaf in 1006; after which time there are various coins of other princes; but copper was not coined till the year 1343. Besides the coins already mentioned, there are ecclesiastic coins of France, Germany, Denmark, Sweden, Norway, &c. Those of Denmark and Sweden are numerous, but the Norwegian coins of this denomination are rare. Mr Pinkerton describes a silver one in his possession as having arms and a mitre, with the inscription on one side SANCTUS OLAWS REX NORVEY; on the reverse OLAWS DEI GRA. ARCEP. NID'SEN, meaning NIDROSIENSIS, or archbishop of *Nidros*, now Drontheim.

18. Bohemia. The coinage of this kingdom appears at a very early date, viz. in the year 909, under duke Boleslaus I. These coins are followed by others of Boleslaus II. and Emma his wife in 970; of Boleslaus III. in 1002; Jaromir in 1020; Udalrich in 1030, and other princes. The *bracteate* money of Ottocar I. was coined in 1197.

19. Poland. The coinage of this country is nearly as ancient as that of Bohemia. The coins are on the German model, but no particular account of them has been published.

20. Russia. None of the Russian money appears to be more ancient than the 13th century. the first are the *kopecks* or silver pennies, which have upon them rude figures of animals on one side, and a man standing with a bow or spear on the other. There are likewise coins of Moscow, struck by Aristoteles the architect in 1482, the *roubles* or dollars and their halfs. There are some of the impostor Demetrius in 1605, which are very scarce.

21. Prussia. The first Prussian coins were struck at Culm by the Teutonic knights in 1230. They were silver pennies, and upon the German plan.

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In the next century were ſtruck ſhillings, groats, and *ſchots*; the laſt were the largeſt, and are extremely rare. They have the Pruſſian ſhield, an eagle ſurmounting a croſs, with a roſe-ſhaped border, MONETA DOMINORUM PRUSSIÆ: on the reverſe is a croſs fleurie, within a border of a ſimilar kind, having the inſcription HONOR MAGISTRI JUSTITIAM DILIGIT.—Gold coins were ſtruck in the ſame century. In the time of Copernicus the money was ſo debaſed, that 12 or 13 marks were worth but one of pure ſilver.

22. England. The Engliſh coins are of various kinds.

1ſt. *Heptarchic.* Theſe are only of two ſorts, viz. the *ſkeatta* or penny of ſilver, and the *ſtyca* of copper. Few of the pennies appear till after the year 700; though ſome are met with which bear the name of Ethelbert I. king of Kent, as old as 560. At firſt they had only rude figures of ſerpents, but in later times legends were likewiſe added. Moſt of theſe pennies have pagan ſymbols upon them. The ſtyca was only coined in Northumberland, and was a very ſmall piece about the value of half a farthing.

2d. Coins of the *chief monarchs* of England. Mr Pinkerton denies that an end was put to the heptarchy by Egbert in 832, as is commonly ſuppoſed; though he owns that he was *chief monarch* of the country, as ſeveral others had been before him. Edgar, who reigned in 959, according to him was the firſt king of England; and the coins of the chief monarchs form almoſt a complete ſeries from the time of Egbert to Edgar. The only chief monarch of whom there are no coins is Ethelbald, who reigned in 857. Moſt of theſe coins bear rude portraits; but the reverſes are ſometimes curious and intereſting. Some have views of cathedrals and other buildings; particularly one of Edward the Elder in 900; which has the cathedral of York with three rows of windows, round arched, as the other Saxon and Norman buildings; the Gothic arch being quite unknown till after the 12th century. Some coins of Anlaf king of Northumberland, have the famous raven, the Daniſh enſign; and thoſe of other princes have frequently very curious reverſes.

3d. *Eccleſiaſtic* coins appear of the archbiſhops of Canterbury, Wulfred, in 804, Ceolnoth in 830, and Plegmund in 889.

4th. Coins of the *kings* of England. The ſilver penny, which had begun during the heptarchy, continued to be the general coin after the kingdom had been united under one head; and extends in a continued ſeries from Egbert almoſt to the preſent reign. The only kings wanting are Edmund Ironſide, Richard I. and John. At firſt the penny weighed 22½ grains; but towards the cloſe of the reign of Edward III. it fell to 18 grains; and in that of Edward IV. to 11. In the time of Edward VI. it was diminiſhed to 8 grains; and in queen Elizabeth's reign to 7¾; at which it ſtill continues.

Halfpennies and farthings were firſt ſtruck in ſilver by Edward I. in 1280; the former continued to the time of the commonwealth, but the latter ceaſed with Edward VI. The groat was introduced by Edward III. in 1354, and continues to this day, though not in common circulation. The half-groat or twopence is of the ſame date, and alſo continues to the preſent time.

Shillings were firſt coined by Henry VII. in 1503. At firſt it was called *teſtoon* from the *teſte*, *teſte*, or head of the king upon it: the name *ſhilling* being derived from the German *ſchelling*; under which appellations coins had been ſtruck at Hamburgh in 1407. The crown was firſt coined in its preſent form by Henry VIII. Formerly it had appeared only in gold, whence the phraſe of crowns of gold; though theſe indeed were the largeſt gold coins known for a long time in France and other countries on the continent, being worth about 10s. ſterling. They had their name from the crown ſtamped on one ſide, and were firſt coined by Charles VI. in 1384, and continued till the time of Lewis XIV. The half-crown, ſixpence, and threepence, were coined by Edward VI. In 1558, Q. Elizabeth coined three half penny, and in 1561, three farthing pieces; but they were diſcontinued in 1582. From the year 1601 to the preſent time the coins of England remain the ſame.

Gold was coined in England by Henry III. in 1257; the piece was called a *gold penny*, and was larger than the ſilver one; and the execution is by no means bad for the time. The ſeries of gold coinage, however, commences properly from Edward III. In 1344 this monarch firſt ſtruck florins, in imitation of thoſe in Italy; and it is remarkable, that though theſe coins, at the time they were firſt iſſued, bore only ſix ſhillings value, they are now intrinſically worth 19s.; ſo much has the value of gold increaſed ſince that time. The half and quarter florin were ſtruck at the ſame time, but only the laſt has been found. The florin however, being inconvenient, gave place to the noble of 6s. 8d. value, and exactly half a mark. The latter had its name from being a limited ſum in accounts; and was eight ounces in weight, two thirds of the money pound. It is ſometimes alſo called *ſelibra*, as being one half of the commercial pound of 16 ounces. The noble had its name from the nobility of the metal; the gold of which it was coined being of the fineſt ſort. Sometimes it is called *roſe noble*, from both ſides being impaled in an undulating circle. It continued, with the half and quarter noble, to be the only gold coin till the angels of Edward IV. appeared in 1465. Theſe had their name from being ſtamped with the image of Michael and the dragon. The angelites of 3s. 4d. value were ſubſtituted in their place. In 1527 Henry VIII. added to the gold coins the crown and half-crown at their preſent value; and the ſame year he gave *ſovereigns* of 22s. 6d. and *ryals* of 11s. 3d. angels at 7s. 6d. and nobles at their old value of 6s. 8d. In 1546 he cauſed ſovereigns to be coined of the value of 20s. and half ſovereigns in proportion. His gold crown is about the ſize of our ſhilling, and the half-crown of ſixpence, but thin. All his coins, however, gold as well as ſilver, are much debaſed; and it was not without much labour and trouble that Edward VI. brought it back to its former ſtandard. On the union of the two crowns, James gave the ſovereign the name of *unite*; the value continuing of 20s. as before. He coined alſo roſe-ryals of 30s. value, ſpur-ryals of 15s. angels of

10s.

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10s. and angelets of 5s. Under the commonwealth, the ſovereign got the name of the *twenty-ſhilling* piece, and continued current till the coinage of guineas. Theſe were ſo called from their being coined of Guinea gold, and were at firſt only to go for 20s. though by an univerſal but tacit conſent they always paſſed for 21s. Half-guineas, double guineas, and five guinea pieces, were alſo coined during the ſame reign; which ſtill continue, though the two latter are not in common circulation. Quarter guineas were coined by George I. and likewiſe by his preſent majeſty; but they were found ſo troubleſome on account of their ſmall ſize, that they were ſtopped within a year or two when received at the Bank of England; and thus are not to be met with at preſent. A few pieces of 7s. value have likewiſe been coined, and are known by the lion above the helmet; and are now in circulation. In 1688 the guinea roſe to 22s. 6d. and continued to increaſe in value till 1696, when it was as high as 30s. but after the recoinage in 1697 and 1698, it fell by degrees, and in 1717 was at its old ſtandard of 21s. and at that time ſilver was fixed at its preſent ſtandard value, viz. as 1 to 15¼ in weight.

Though the firſt money coined in Britain was copper, yet, except the Northumbrian ſtycas, no copper coin was found in England from the time of the Saxon conqueſt till the year 1672. An averſion to a copper coinage, it ſeems, was prevalent throughout the nation; and queen Elizabeth, who without heſitation uſed baſe money for Ireland, yet ſcrupled at coining copper for England. This want of ſmall coin occaſioned ſuch an increaſe of private tokens for halfpennies and farthings, that it became a ſerious object to government; and in 1594 a copper coinage was ſeriouſly thought of. This year a ſmall copper coin was ſtruck, about the ſize of a ſilver two pence, with the queen's monogram on one ſide, and a roſe on the other; the running legend on both ſides being THE PLEDGE OF A HALFPENNY. Of this there are patterns both in copper and ſilver, but both of them ſoon fell into diſuſe. On the 19th of May 1613, king James by royal proclamation, iſſued farthing tokens. They are generally of the ſame ſize with the twopence, with two ſceptres in ſaltier ſurmounted with a crown, and a harp upon the other; with an intention, as it would ſeem, that if they were refuſed in England they might paſs in Ireland. In 1635 Charles I. coined thoſe with the roſe inſtead of the harp; but the circulation of theſe was entirely ſtopped by the vaſt number of counterfeits which appeared, and by the king's death in 1648. After this the private tokens began again to circulate, till put a ſtop to by the coinage of farthings in 1670. The workmanſhip of the tokens is quite contemptible. In 1672 the halfpence as well as the farthings which had been ſtruck two years before began to circulate. They were of pure Swediſh copper, the dyes engraved by Roettier; and they continued till the year 1684, when ſome diſputes aroſe about the copper lately obtained from the Engliſh mines. Tin farthings were coined with a ſtud of copper in the centre, and inſcribed round the edge as the crown pieces, with NUMMORUM FAMULUS, 1685 or 1686. In 1685 halfpence of the ſame kind were coined; and the tin coinage continued till the year 1692, to the value of more than 65,000l. but next year the tin was all called in by government, and the copper coinage recommenced. The farthings of queen Anne are all trial pieces, excepting thoſe of 1714, the laſt year of her reign. They are (ſays Mr Pinkerton) of exquiſite workmanſhip, exceeding moſt copper coins either ancient or modern, and will do honour to the engraver, Mr Croker, to the end of time. The one whoſe reverſe is Peace in a car, PAX MISSA PER ORBEM, is the moſt eſteemed; and next to it the BRITANNIA under a portal. The other halfpence and farthings are leſs valuable.

23. Scotland. Silver pennies of Alexander I. who reigned in 1107, are believed to exiſt; and there certainly are ſome of Alexander II. in 1214. There are likewiſe coins of David I. in 1124, but perhaps none of Malcolm IV. his ſucceſſor, whoſe reign was very ſhort. There are many coins of William I. in 1165, and a large hoard of his pennies was found at Inverneſs in 1780.

The money of Scotland continued to be of the ſame value with that of England till the country was drained by the vaſt ranſom of David II. after which it became neceſſary to reduce its ſize; and ſo much did this diminution affect England, that Edward III. found himſelf obliged to leſſen the Engliſh coin alſo. The diminution of the Scottiſh coin, however, continued ſtill to go on until it became impracticable to keep par with that of England. In the firſt year of Robert III. it paſſed only for half its nominal value in England; in 1393, Richard II. ordered it only to go for the weight of the genuine metal it contained. In 1600 it had ſunk to ſuch a degree as to paſs only for a twelfth part of the Engliſh money, and continued at that low ebb till the coinage of Scotland was entirely cancelled by the union of the two kingdoms.

Of ſilver coins we have only pennies till the year 1293, when Edward I. having coined halfpence and farthings, Alexander III. of Scotland coined alſo halfpence, of which we have a few, but no farthings are to be met with; but there are ſilver farthings of Robert I. and David II. The latter introduced the groat and half groat, which completed the ſet of Scottiſh ſilver. It continued unaltered till the time of queen Mary, when they all ceaſed to be coined in ſilver, on account of the high price of that metal. In 1553 ſhillings were firſt coined, with the buſt of the queen on one ſide, and the arms of France and Scotland on the other. The ſilver crown was firſt coined in 1565, which went for 30s. Scots; leſſer pieces of 20s. and 10s. having likewiſe been ſtruck, and marks of ſilver, worth 3s. 4d. Engliſh, were alſo coined about the ſame time. Theſe coins have upon them the marks XXX. XX. X. to denote their value. They are commonly called Cruickſtone dollars, from the palm trees upon them, miſtaken for a remarkable yew at Cruickſtone near Glaſgow, where Henry Darnley reſided. It is deſcribed, however, in the act as a palm, with a "ſhell-padoc" (a tortoiſe) crawling up. This alludes to Darnley's marriage with the queen, as the motto from Propertius, DAT GLORIA VIRES, alſo implies. The motto

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motto NEMO ME IMPUNE LACESSET firſt appears on the Scottiſh coins in 1578, and the invention is given to the celebrated Buchanan. In 1582, the crown of an ounce weight went for 40s. Scots, and was accordingly marked XL. In 1597 the mark was L. the Scottiſh money being then only one tenth of the Engliſh: the mark was LX. in 1601, the value being then reduced to one twelfth, at which it has ever ſince continued. In the time of Charles I. half-marks, 40 and 20 penny-pieces were coined. In 1675 the Scottiſh dollars firſt appeared, in value 56s. Scots, with halves and quarters of proportional value. In 1686 James VII. coined 60, 40, 20, 10, and 5s. pieces; but only thoſe of 40 and 10s. are known, with theſe numbers under the buſt. At the union of the kingdoms all the Scottiſh coins were called in, and recoined at Edinburgh, with the mark E under the buſt to diſtinguiſh it; ſince which there has been no coinage in Scotland. The Scottiſh ſilver coins are in general equal, if not ſuperior, in the workmanſhip to the Engliſh.

Gold was firſt iſſued by Robert II. about 30 years after Edward III. of England had coined the ſame metal in that country. The pieces were at firſt called St Andrew's, from the figure of that tutelar ſaint upon the croſs, and who appears on the obverſe with the arms of Scotland, and on the reverſe a lion in a ſhield. The lion was another name for the largeſt gold coin in Scotland, from the arms of the kingdom upon it. The next was the unicorn under James III. which were followed by the bonnet pieces of James V. Theſe laſt are of admirable workmanſhip, being almoſt equal to the ancient coins in this reſpect. In imitation of the French, the monarch we ſpeak of diminiſhed the ſize of the coin without leſſening its weight; an improvement not adopted by the Engliſh for a whole century. The laſt gold coined in Scotland was the piſtole and half piſtole, of twelve and ſix pounds Scots. Theſe coins have the ſun under the head. The gold coins of Scotland fell in the ſame proportion with the ſilver.

The copper coinage of Scotland is of more early date than that of England. It was preceded by money of *billon*, or copper waſhed with ſilver, called black money. James III. firſt coined black farthings in 1466; and this is recorded by hiſtorians as one of his greateſt faults. This kind of coinage, however, continued as late as the reign of James VI. In his time the true copper coinage began; but as the value of Scottiſh money had now declined almoſt to the utmoſt, the pieces ſuddenly aſſumed a form almoſt reſembling that of the French coins. The *boadle*, ſo called from Bothwell the mintmaſter, being equal in ſize to the *liard*, and worth two pennies Scottiſh, was ſtruck. The billon coin, formerly called *bas piece*, and worth ſix pennies Scots, was now coined in copper, and termed the *bawbee*. Thus it correſponded with the French half ſol and Engliſh halfpenny, the Scots penny being now equivalent to the French *denier*. Some pieces named *Achefons* were coined by James VI. in 1582, when the Scottiſh money was to the Engliſh as 1 to 8; but on its being ſtill farther reduced, they went for 8 pennies, a third more than the value of the bawbee. Beſides theſe there were the hardie and plack, the former being worth three and the latter four pennies Scots. This coinage continued through the reigns of Charles I. and II.; but Scottiſh coins of the former are perhaps the ſcarceſt of any.

24. Ireland. The firſt coins introduced into this kingdom ſeem to have been thoſe of the Danes, and which have only a number of ſtrokes round them inſtead of letters. In the tenth century, however, this coinage had been conſiderably improved; and in 930 and 994 there are pennies ſtruck in Dublin, with the inſcription ON DVFLI or DYFLI, *Duflin* or *Dyflin* being the Daniſh name of that city. There are likewiſe coins of the Iriſh princes themſelves, and of the Engliſh monarchs, ſtruck in Ireland as early as the ninth century; and it is aſſerted by ſome, that Ireland, even in theſe days, had been conquered by England; of which, indeed, theſe coins ſeem to be a proof. None of the Iriſh coins of Henry II. are to be met with, but we have ſome of the coins of John; and from his time to that of Henry V. the Iriſh coins are known by a triangle incloſing the king's head, which appears alſo upon the coins of other nations at this period. The harp does not appear upon the Iriſh coins till the time of Henry VIII. Till the time of this monarch, the Engliſh and Iriſh coins are the ſame; but the ſame debaſement of the coin which at that time took place in England extended alſo to Ireland; but in 1601 copper halfpence and farthings were coined alſo for this kingdom. Theſe circulated in Ireland when James VI. iſſued his farthing tokens of copper, the latter being of two ſizes, that if they failed in England they might be ſent to Ireland as pennies and halfpence. In 1635 a mint was eſtabliſhed in Dublin by Charles I.; but it was ſtopped by the Iriſh maſſacre, and the many diſturbances which followed; ſince which time the ſcheme has not been reſumed. After the maſſacre, St. Patrick's halfpence and farthings were coined by the Papiſts, bearing the legends FLORSAT REX, and on the reverſe ECCE GREX; on the farthing QUIESCAT PLEBS. Copper tokens were ſtruck by towns and tradeſmen, as in England and Scotland. In 1680, halfpence and farthings were iſſued by authority, with the harp and date. In 1689, James II. having invaded Ireland, inſtituted a mint, and coined ſhillings and half crowns of all the refuſe metal he could find, particularly ſome braſs guns were employed, whence the coinage is commonly called *gun-money*. Even this metal, however, ſoon became ſo ſcarce, that a diminution in its ſize is quite apparent from June 1689 to July 1690; and as the month of their mintage is marked upon them, this decreaſe is eaſily perceived. In March 1690, pennies of lead mixed with tin were iſſued; and on the 15th of June the ſame year, crowns of white metal were coined; but theſe are now very ſcarce. In 1722, the patent for coining halfpence and farthings was given to William Wood, which excited ſuch diſcontent in Ireland. From the ſmall ſize allowed by the patent to theſe pieces, it was ſuppoſed that the patentee would have gained 60,000l. but as he cauſed them to be ſtruck of a ſize ſtill ſmaller, his gains were eſtimated at 100,000l. The coins, however, are of admirable workmanſhip, and very fine copper, bearing the beſt portrait of King George I. to be found any where.

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where. Sir Iſaac Newton, at that time at the head of the mint, declared that they were ſuperior to the Engliſh coins in every thing except the ſize. In 1737 the Iriſh halfpence and farthings, with the harp on the reverſe, were coined, and continue to the preſent time. In 1760 there was ſuch a ſcarcity of copper coin, that ſome private perſons applied for leave to coin halfpence, which appeared with a very bad portrait of George II. and the words VOCE POPULI around it. No gold or ſilver has been coined in Ireland ſince the maſſacre in 1641.

TABLE V. MODERN MEDALS, *properly ſo called.*

1. Scottiſh medals. Theſe take the lead in the preſent article, the firſt modern medals of gold being thoſe of David II. ſtruck between the years 1330 and 1370. Only two of them now exiſt; one in the collection of Mr Barker of Birmingham, and the other in that of Dr Hunter. In 1478 there is a medal of James III. ſent to the ſhrine of St Amboiſe in France. It is deſcribed as of two inches and a third in diameter; the weight near two ounces; having on the obverſe a beardleſs king, with long hair, ſitting on a throne, holding in one hand a naked ſword; in the other a ſhield, with the Scottiſh arms. On the borders of the canopy above the throne is an inſcription in Gothic letters, IN MI DEFFEN, being corrupt French for *In my defence;* a common motto in the Scottiſh arms. Above the canopy is VILLA BERWICI: the reverſe bears St Andrew and his croſs, SALVUM FAC POPULUM TUUM, DOMINE. There is alſo a medal of James IV. in the collar of St Michael, having on the reverſe a Doric pillar ſurmounted by a young Janus, ſtanding on a hill, beyond which is the ſea, and land on either ſide. This, however, is by ſome ſuſpected to be a forgery.

The moſt remarkable Scottiſh medals are thoſe of the unfortunate Mary. The firſt is properly French, having been iſſued at her coronation as queen of France, along with her huſband king Francis II. On the obverſe of this piece there are portraits of Francis and Mary, face to face, with three legends around them, the outermoſt containing their titles; the middle one the following ſentence: NORA NONA DOMINUS J. H. S. EXPIRAVIT HELLI CLAMANS; the innermoſt the name of the city (Paris). On the reverſe are the arms of France and Scotland. Fine teſtoons were alſo coined upon the ſame plan, and are now ſo rare that Dr Hunter gave ten guineas for one he has in his collection. The ſame portraits appear on the fine crown of Mary and Henry, in 1565, which is ſo rare as to be eſteemed a medal of the higheſt value; and Mr Pinkerton imagines, that if brought to a ſale it would bring 40 or 50 guineas.

Another remarkable medal of Mary repreſents her full-faced, and weeping, with the inſcription, O GOD, GRANT PATIENCE, IN THAT I SUFFER WRANG. The reverſe has in the centre, QUHO CAN COMPARE WITH ME IN GRIEF? I DIE AND DAR NOCHT SEEK RELIEF; with this legend around, HOURT NOT THE (figure of a heart) QUHAIS JOY THOU ART. There are alſo many counters of this unfortunate princeſs, being thin ſilver pieces of the ſize of a ſhilling. "They all appear (ſays Mr Pinkerton) to have been done in France by Mary's direction, who was fond of devices. Her cruel captivity could not debar her from intercourſe with her friends in France, who muſt with pleaſure have executed her orders, as affording her a little conſolation."

The coronation medal of Charles I. ſtruck at Edinburgh for his inauguration, June 18, 1663, is remarkable as being the only one ever coined of Scottiſh gold, and the firſt in Britain ſtruck with a legend on the edge. With reſpect to the workmanſhip, it is inferior to Simon's. Of theſe medals only three are known to exiſt, of which one is in the Muſeum. It is not uncommon in ſilver; in which caſe it ſometimes wants the legend on the edge.

2. Italian medals. Theſe appear in the 15th century, and from that time ſucceſſively in moſt European countries. Vittore Piſano, a painter of Verona, is celebrated as the reſtorer of the art; but it remains to be accounted for how the medals of king David already mentioned came to exiſt ſo long before. Mr Pinkerton conſiders this artiſt rather as an inventor than a reſtorer, his medals having no reſemblance to the ancient coins, as being large, and all caſt. They were firſt modelled in wax, then a mould taken from the model in fine ſand, and other ingredients. After a good caſt was procured, it was touched up, and made a model for the reſt. Theſe medals of Piſano are almoſt always inſcribed *Opus Piſani Pictoris.* The portraits of a great number of illuſtrious men were done by him in this manner; and in the Britiſh Muſeum is a large braſs medal of Piſano by himſelf.—Other artiſts were Boldu, Mareſcotto, Matthæus de Paſtus, Sperandes, Miſaldone, &c. Towards the end of the century, however, the medals began to aſſume a more elegant appearance; and the papal ones are not only the moſt elegant, but the moſt ancient ſeries of all the modern medals. The improvement began in the reign of Alexander VI. ſo famous for his own crimes, and thoſe of his nephew Cæſar Borgia. His ſucceſſors, Julius II. Leo X. Hadrian VI. and Clement VII. had many of their medals deſigned by Raphael, Julio Romano, and other eminent painters, and the engraving executed by artiſts of equal merit. Among theſe were the celebrated Cellini, and the noted Paduan forgers of Roman coins, Cavino and Baſſiano. In 1644 Cormanni, a medallic artiſt, was impriſoned on account of a piece which repreſented the Pope upon one ſide, and Olympia Maidalchina, the *relation* of his holineſs, on the other. The unfortunate Cormanni poiſoned himſelf. About this time the family of the Hamerani, originally from Germany, began to engrave the papal medals; which they did with ſurpriſing merit for ſeveral generations. Each of the daughters did a fine medal, as we are informed by Venuti.

Beſides the papal medals, there are many iſſued by the various ſtates of Italy. There are medals of Frederic II. of Sicily in 1501, of ſeveral Venetian generals in 1509, of Alfonſo duke of Ferrara in 1511, and of the celebrated Andrew Doria in 1528.

3. French medals. Till the reign of Lewis XIV.

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XIV the medals of this country are neither fine nor numerous; but this monarch exceeds all modern princes in this way. Many of his pieces are well deſigned and executed, though objectionable on account of their falſehood.

4. Daniſh medals. Theſe appear of Chriſtian II. in 1516, of Frederic and Sophia in 1532, of Frederic I. and Chriſtian III. in bonnets worn in the 16th century. The elephant of the houſe of Oldenburg is frequent upon Daniſh medals.

5. Swediſh medals. Theſe begin with Guſtavus Vaſa; and ſeveral of Chriſtina are likewiſe to be met with. There are alſo ſome curious ones of Charles XII.

6. Dutch medals. Theſe begin in 1566; and many of them are remarkable for maps and plans, which muſt be very intereſting to poſterity. "Had the Greeks and Romans (ſays Mr Pinkerton) given us maps and plans, what a fine ſyſtem of ancient geography and topography a cabinet of medals muſt have been!"

7. Medals of Spain, Portugal, and Germany. The Spaniſh medals began with Gonſalo in 1503, many of which are curious and intereſting. Under Charles V. there are many curious Spaniſh medals: but thoſe of Germany begin with Frederic in 1453. They are extremely numerous; as we may eaſily ſuppoſe from the greatneſs of the empire, and the various ſtates which compoſe it. There is a famous medal of Sebaſtian king of Portugal, famous for his unfortunate expedition into Africa in 1578; with his buſt, full face, and three quarters in length. On the reverſe is a ſhell-fiſh in the ſea, with the moon and ſeven ſtars, bearing the inſcription SERENA CALSA FAVENT. There is alſo a curious lozenge-ſhaped coin of the ſame, with the arms of Portugal, and the king's name and title: On the reverſe is a croſs with the inſcription IN HOC SIGNO VINCES, 1578.

8. Satiric medals. Theſe began almoſt as ſoon as the knowledge of the art of coining medals was revived. They ſeem to have been almoſt unknown to the ancients. One indeed of the emperor Gallienus is ſuppoſed to have been ſatiric. It has on the front the emperor's buſt, with the inſcription GALLIENÆ AUG. the reverſe is Peace in a car, PAX UBIQUE; but this has been proved to be only a blundered coin. Some other ancient medals, however, are not liable to this objection. The firſt modern ſatiric medal publiſhed was that of Frederic king of Sicily in 1501, againſt his antagoniſt Ferdinand king of Spain. It has on one ſide the head of Ferdinand, with the inſcription FERDINANDUS R. AR. VETUS VULPES ORBIS; on the reverſe a wolf carrying off a ſheep, JVGVM MÆVM SVAVE EST, ET ONVS MEVM LEVE. Many others have been ſtruck, of which the wit would now perhaps be difficult to be found out: but of all nations the Dutch have moſt diſtinguiſhed themſelves in this way; and paid very dear for their conduct, as they brought upon themſelves, by one or two ſatiric medals, the whole power of France under Lewis XIV.

9. Engliſh medals. The firſt of theſe is in the duke of Devonſhire's collection. It is of a very large ſize, and done on the plan of the early Italian medals. It has on the reverſe the arms of Kendal, with the inſcription TEMPORA OBSIDIONIS TURCORUM. MCCCCLXXX. On the other ſide is a portrait with IO. KENDAL RHODI TURCUPELLERIUS. It was found laſt century in Knareſborough foreſt; but Mr Pinkerton has no doubt of its having been done in Italy. The next is that of Henry VIII. in 1545, and is of gold, larger than the crown-piece, with the king's head upon the obverſe, and three legends within each other, including his titles, &c. The reverſe contains two inſcriptions, declaring him to be the head of the church; the one in Hebrew, the other in Greek. It was imitated exactly by Edward VI. whoſe coronation medal is the firſt we have. There are two medals of Philip and Mary, whoſe execution is tolerably good; but thoſe of Elizabeth are very poor. There are good medals of James I. and his queen; with a fine one of Charles I. and Henrietta, though the workmanſhip is much inferior to the antique. There are many good medals of Charles, with various devices upon their reverſes. Under the commonwealth the celebrated Simon produced medals which are deſervedly reckoned the moſt admirable pieces of modern workmanſhip. There are many good medals of Charles II. James II. and William III. Some are alſo found of James after his abdication. Some fine gold, ſilver, and copper medals, were iſſued in the time of Queen Anne; the two laſt affording a ſeries of all the great actions of the duke of Marlborough. About the year 1740, a ſeries of medals was engraved in London by Daſſier, a native of Geneva, containing all the kings of England; being 36 in number. They are done upon fine copper, and executed with great taſte. There are beſides many medals of private perſons in England; ſo that it may juſtly be ſaid, that this country, for medals, exceeds almoſt every other in Europe.

To this account of modern coins and medals we ſhall add that of another ſet called *ſiege-pieces*, and which were iſſued during the time of a ſiege in caſes of urgent neceſſity. Theſe were formed of any kind of metal; ſometimes of no metal; and Patin mentions a remarkable one ſtruck at Leyden in 1574, when the place was beſieged by the Spaniards. It was of thick paper or paſteboard, having a lion rampant, with this inſcription, PVGNO PRO PATRIA, 1574; and on the reverſe LVGDVNVM BATAVORVM. There are various ſiege-pieces of Charles I. both in gold and ſilver, ſome of the latter being of the value of 20 ſhillings.

The *nummi bracteati* are a ſpecies of modern coins, ſomewhat between counters and money; and have their name from the word BRACTEA, a ſpangle or thin bit of metal. They are commonly little thin plates of ſilver, ſtamped as would ſeem with wooden dies upon one ſide only, with the rude impreſſion of various figures and inſcriptions. Moſt of them are eccleſiaſtic, and were ſtruck in Germany, Switzerland, Denmark, Sweden, Norway, and a few in Poland. They continued to be in uſe in Germany till the end of the 15th century; and ſome are ſtill uſed in Switzerland.

TABLE

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TABLE VI. ABBREVIATIONS *used in the* LEGENDS *of* COINS *and* MEDALS; *from* Mr PINKERTON.

GREEK COINS.

A. Athens, Argos, Aulus, Asylum, primi or first; as Επι τον Α Ασιας, "Ephesians, first people of Asia."
A. Abassus, Abdera, Abydus on Hellespont. AB. Abydus in Egypt. ABT. Abydus on Hellespont. ΑΘ. ΑΘΕ. Athens. AIT. Aegina. AIΓΟΣΠΟ. Aegospotamos. AIA. Aelius, Aelia Capitolina. AIN. Aenos. AΚ.—ΑΚΡΑΓΑΝ. Agrigentum. AKI. Acilium. AKT. Actium. AΛΕ. Alexandria. AM. Amyntas. AMBP. Ambracia. AMΦI. Amphilochia. ANΘ. Ανθυπατου, Proconsul. ΑΝΤΙΣ. Antissa. ANA. Anactoria. ANTI. Antium. AN. Ancyra. ANT. Antoninus, Antioch. AΞ. Axus in Crete, AΟΝ. Aonitæ. AOΥΕ. Avenio, *Pell.* AΠ. Appius. ΑΠΑ. Apamea. ΑΠΟ. Apollonia. ΑΠΤΑ. Aptara. AP. Aradus, Harma. ΑΡΓΕ. Argennos. ΑΡΓ. Argos. API. Aricanda. APIM. Arminum. ΑΡΣΙ. Arsinoe. APT. Aryca. ΑΡΧ. Αρχιερευς or Αρχων, high priest or magistrate. ΑΣΙΑΡΧ. Asiarchæ, presidents of the games of Asia*. AΣ. Asylum. Α. Σ. Πρωτος Συριας, First of Syria. ΑΣΚ. Ascalon. AT. Atabyrium. ΑΤΑΡ. Atarnæ. ΑΤΓ. Augustus. ΑΤΡΗΛ. Aurelius. AT. ΑΤΤ. Αυτοκρατωρ, Emperor. ΑΤΤΟΝ, Αυτονομοι, enjoying their own laws. ΑΦΙ. Aphyta. ΑΦΡ. Africanus. ΑΧ. Achaii.

B. Βουλης, Council, Berytus, Bithynia. ΒΑΓΗΔΑΟ. Bagadaonia. ΒΑΛ. Valerius. ΒΗ. Berytus. ΒΙΤΟΝ. Bitontum. ΒΟΙ. Bœotia. ΒΡΤΝ. Brundusium. ΒΥ. Byzantium.

C. ΓΡ. ΓΡΑΜ. Grammaticus, or keeper of the records. Γ. Gaius, or Caius. ΓΑ. Gallus, Gallerius, Gallienus. Γ. Τυραννου, Illustrious. ΓΕΛ. Gelas. ΓΕΡ. Germanicus. ΓΝ. Gnæus. ΓΟΡΤΥ. Gortyna. ΓΡΑ. Graviscæ.

D. Decimus, Dymæ. ΔΑΚ. Dacicus. ΔΑΜ. Damascus. ΔΑΡ. Dardanum. ΔΗ. Δημος, the people. ΔΗΜΑΡΧ. ΕΞΟΥΣ. with Tribunitian power. ΔΕ. Decelia. ΔΕΚ. Decius. ΔΕΡ. Derbe in Lycaonia. ΔΗ. Delos. ΔΙ. Diospolis. ΔΡΕ. Drepanum. ΔΤΡ. Dyrrhachium.

E. Ερυς, Ε. ΕΡΕΣ, Eresus, ΕΛΕΥ. Eleusis. ΕΛΕΥΘ. Ελευθερα, Free. ΕΠΙ. Epidaurus. EPI. Etiza in Caria. ΕΡΧ. Erchia. EPT. Erythræ. ET. ETO. Ετους, Year. ET. Etenna in Pamphylia. EX. Εξουσιας, Power. ET. ΕΤΒΟ. Eubœa. ΕΤΣ. Ευσεβης, Pious. ΕΤΤ. Ευτυχης, Happy. ΕΦ. ΕΦΕ. Ephesus.

Z. Α. Zacynthus. ΖΑΝΚΛ. Zancle, Messana anciently so called.

H. Elius. ΗΓ. Ηγεμων, President. HPAK. Heraclea.

Θ. Thasus. ΘΕ. Thespiæ. ΘΕΣ. Thessalonica. ΘΗ. ΘΗΒ. Thebæ.

I. ΙΕΡ. Ιερος, Sacred. ΙΕΡΑΠΤ. Hierapythna. ΙΚΑΡ. Hiccara, ΙΛΙ. Ilium. ΙΟΥ. Julis a city, or Julius. ΙΟΥΛ. Julia. ΙΠΑ. Hippana. IP. Irene Inf. *Pellerin.* ΙΣ. Isus, Ithæa.

K. Caius; Κουιντος, Quintus. K. ΚΑΙΣ. Cæsar. K. Κ. Κοινον Κιλικιας, Community of Cilicia. ΚΑΙΛ. Calius. ΚΑΛ. Chalcedon. ΚΑΛΛΙ. Calliopolis. ΚΑΜΑ. Camara. ΚΑΝ. Cnossus. ΚΑΠ. Capua. ΚΑΠΠ. Cappadocia. ΚΑΡ. Carthæ. ΚΑΡΤ. Carthago. ΚΑΤ. Caulonia. ΚΕ. Ceos. ΚΕΦ. Cephalædis. ΚΙ. Cisamus, Cibyrum. ΚΙΛ. Cilbiani. ΚΛ. Clazomenæ, Claudius. ΚΛΑ. Clazomenæ. ΚΝΙ. Cnidus. ΚΟ. Corinth. ΚΟΙΝ. Κοινον, Community. ΚΟΛ. Κολωνιας, Colony, Colophon. ΚΟΜ. Commodus. ΚΟΡ. Corcyra. ΚΡ. Cragus in Lycia. ΚΡΑ. Cranos. ΚΡΗ. Crete. ΚΤΗ. Ctesene, *Pell.* ΚΥ. Cuma, Cydonium, Cyon. ΚΥΘ. Cythnus. ΚΥΠ. Cyprus. ΚΥΡ. Cyrene.

L. or Λ. Λυκιαρχης, Year. A. Lucius. ΛΑ. Lacedæmon. ΛΑΜ. Lamea, Lampsacus. ΛΑΡ. Larissa. ΛΑΡΙ. Larinum. ΛΕ. ΛΕΥ. Leucas. ΛΕΟΝ. Leontium. ΛΗΜ. Lemnos. ΛΙΠ. Lipara. ΛΙΤΙ. Liviopolis ΛΟ. ΛΟΥΚ. Locri. ΛΟΓ. Longene. ΛΤΓ. ΛΤΚ. Lycus.

M. Marcus, Malea, Megalopolis, Mazaka. MA. Maronea, Massilia, Macedonia. ΜΑΓ. Magnesia. MAKPO. Macrocephali. MAM. Mamertini. ΜΑΣΣ. Massilia. MAZ. Mazara. ΜΕ. Menelais, on Syrian regal coins. ΜΕΝΕΚ. Menecrates. ΜΕ. ΜΕΓ. Megara, Megalopolis, Melite. ΜΕΓ. Μεγαλης, Great. ΜΕΣ. Messana. ΜΕΤΑ. Metapontum. M. ΜΗΤΡΟ. Metropolis. MI. Miletus. ΜΚ. Mazaka of Cappadocia; on coins of Mithridates VI. ΜΟΡ. Morgantia. ΜΤ. Mycenæ. ΜΤΡ. Myrlea. ΜΤΤΙ. Mytilene.

N. Naupactos. ΝΑΖ. Naxos. ΝΑΤΑΡΧ. Ναυαρχιδι, enjoying a sea-port. NE. Nemea. N. ΝΕΩΚ. Neocori. ΝΕΟΠ. Neopolis. ΝΕΡ. Nerva. ΝΙΚ. Nicæum, Nicomedia. ΝΤΣ. Nysæi, on coins of Scythopolis, *Pell.*

O. Oethæi. ON. Ονος, being. ΟΠΕΛ. Opelius. ΟΠ. Opus. OPT. Orycus. ΟΡΧ. Orchomenus. ΟΤΠ. or ΤΠ. Ουπατος or Τπατος, Consul. ΟΤΕΡ. Verus. ΟΤΗ. Vetus. ΟΤΕΣΠ. Vespasianus. ΟΤΙΤΗΛ. Vitellius. ΟΦΡΥ. Ophrynium.

P. Πατρα, Πατρος, upon. Π. ΠΟΠΛ. Publius. Π. ΠΑ. Paphos or Paros. ΠΑΙΣ. Pæstum. ΠΑΝ. Panormus. ΠΑΡ. Paropinum. ΠΑΡΙ. Paros. ΠΑΡΘ. Parthicus. ΠΕ. Perinthus. ΠΕΛ. Pella. ΠΕΡ. Pergus. ΠΕΡΤ. Pertinax. ΠΕΣΚ. Pescennius. Π. ΠΗ. Pelusium. ΠΙΝ. Pinamytæ. ΠΛΑ. Platææ. ΠΟ. Pontus. ΠΟΛΥ. Polyrrhenum. ΠΟΣ. Posidonia. ΠΡΑΣ. Prasus. Π. ΠΡΤ. Πρυτανις, Præfect. ΠΡ. ΠΡΕΣ. Πρεσβις, Legate. ΠΡΟ. Proconnesus. ΠΡΟΔΙ. Προδικος, Curator. Π. ΠΡΩΤ. Πρωτος, First. ΠΤ. Ptolemais. ΠΥ. Pylos. PO. Rhodes.

Σ. Σ. Salamis, Samos, Syria. ΣΑ. Samosate. ΣΑΛΑΠ. Salapia. ΣΑΡ. Sardis. ΣΕ. Seriphus, Segeste. ΣΕΒ. Σεβαστος, Augustus. ΣΕΛ. Selinus, Seleucia. ΣΕΠΤ. Septimius. ΣΙ. Siphnos. ΣΙΔ. Side. ΣΙΝΩ. Sinope. ΣΜΥ. Smyrna. ΣΤΡ. ΣΤΡΑ. Στρατηγος, Prætor. ΣΥΒ. Sybaris. ΣΥ. ΣΥΡΑ. Syracuse. ΣΥΡ. Syria. ΣΩ. Solæ,

T. Titus. ΤΑΒΑΛ. Tabala. TA. TANA. Tanagra. TAP. Tarentum, Tarsus. ΤΑΥΡ. Tauromenium. ΤΕ. Tementis. ΤΕΡ. Terina. TH. Tenus. TI. TIB. Tiberius. TPA. Trallis. TPI. Tripolis. TPΩ. Troizene. TTAN. Tyana. TT. Tyndaris. TTP. Tyre (monogram).

ΥΣ. ΥΕΛ. Velia. ΥΠ. ΥΠΑΤ. Υπατος, Consul.

Φ. Ph.l.p, Phœstus, Philuntium. ΦΑ. Phaselis. ΦΑΡ. Pharsalus. ΦΙ. Vibius, Philippopolis. ΦΙΝΕ. Phineium. ΦΛ. Flavius. ΦΟΚ. Phocæum. ΦΟΤΑ. Fulvia. ΦΤ. Phycus in Cyrene.

X. Chios. ΧΑΛ. Chalcis. ΧΕΡ. Chersonesus. ΧΙ. Chytri in Crete.

GREEK NUMERALS.

A	1.	I	10.	P	100.
B	2.	K	20.	Σ or C	200.
Γ	3.	Λ	30.	T	300.
Δ	4.	M	40.	Υ	400.
E	5.	N	50.	Φ	500.
ς or ϛ	6.	Ξ	60.	X	600.
Z	7.	O	70.	Ψ	700.
H	8.	Π	80.	Ω	800.
Θ	9.	ϙ or Ϟ	90.	ϡ	900.

Examples. I is 10: add A to I, and IA makes XI: so IB, IΓ, IΔ, &c. K is 20, KA, KB, &c. A

* There were also Syriarchæ, Lyciarchæ, Galatarchæ, Bithyniarchæ, Cappadociarchæ, &c. Mem. Spec.

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PIA makes III. The Engliſh word AIR marks the grand initial numerals. On coins the numerals are often placed in retrograde order; which makes no difference in the value, as every letter is appropriated to its number. Thus TAT or TAT imply the ſame, 333. But this advantage being unknown to the Roman numerals and Arabic cyphers, is apt to puzzle the beginner.

Roman Coins.

A. AULUS: in the exergue it implies the firſt mint, as ANT. A. coined at Antioch in the firſt mint. A. A. A. F. F. Auro, Argento, Ære, Flando, Feriundo. A. or AN. Annus. A. A. Apollo Auguſti. A. F. A. N. Auli filius, Auli nepos. ABN. Abnepos. ACT. Actiacus, or Actium. AD FRV. EMV. Ad fruges emundas. ADIAB. Adiabenicus. ADOP. Adoptatus. ADQ. Adquiſita. ADV. Adventus. AED. Ædes. AED. P. Ædilitia poteſtate. AED. S. Ædes ſacræ. AED. CVR. Ædilis Curulis. AED. PL. Ædilis Plebis. AEL. Ælius. AEM. or AIMIL. Æmilius. AET. Æternitas. AFR. Africa, or Africanus. ALBIN. Albinus. ALIM. ITAL. Alimenta Italiæ. ANN. AVG. Annona Auguſti. A. N. F. F. Annum Novum Fauſtum Felicem. ANIC. Anicius. ANN. DCCCLXIIII. NAT. VRB. P. CIR. CON. Anno 864 Natali Urbis Populo Circenſes conſtituti. ANT. AVG. Antonius Augur. ANT. Antonius, or Antoninus. AP. Appius. A. P. F. Argento Publico Feriundo. A POP. FRVG. AC. A Populo Fruges Acceptæ. AQ. or AQL. Aquilius. AQVA. MAR. Aqua Martia. ARAB. ADQ. Arabia Adquiſita. ARR. Arrius. AVG. Augur, Auguſtus, Auguſta. AVG. D. F. Auguſtus Divi Filius. AVGG. Two Auguſti. AVGGS. Three Auguſti. AVR. or AVREL. Aurelius.

B. The mark of the ſecond mint in any city. BON. EVENT. Bonus Eventus. B. R. P. NAT. Bono Reipublicæ Nato. BRIT. Britannicus. BRVT. Brutus.

C. Caius, Colonia. C. A. Cæſarea Auguſta. C. CAE. or CAES. Cæſar. CAESS. Cæſares. CARTH. Carthage. CEN. Cenſor. CENS. P. Cenſor Perpetuus. CEST. Ceſtius, or Ceſtianus. CIR. CON. Circum Condidit, or Circenſes Conceſſit. CIVIB. ET SIGN. MILIT. A PARTH. RECVP. Civibus et Signis Militaribus a Parthis Recuperatis. CN. Cneius. COEL. Cœlius. CON. OB. Conſtantinopoli Obſignata, or Conſtantinopoli Officina ſecunda, or Conflata Obryzo. COL. Colonia. CON. SVO. Conſervatori ſuo. CONCORD. Concordia. CL. V. Clypeus Votivus. COMM. Commodus. CLOD. Clodius. CL. or CLAVD. Claudius. COS. Conſul. COSS. Conſules. CORN. Cornelius. CVR. X. F. Curavit Denarium Faciendum.

D. Decimus, Divus, Deſignatus. DAC. Dacicus. D. F. Dacia felix. D. M. Diis Manibus. DES. or DESIG. Deſignatus. DICT. Dictator. DOMIT. Domitianus. D. N. Dominus noſter. DID. Didius. D. P. Dii Penates. DV. Divus.

EID. MAR. Idus Martiæ. EX CONS. D. Ex Conſenſu Decurionum. EX. S. C. Ex Senatus Conſulto. EQ. ORDIN. Equeſtris Ordinis. EX. A. PV. Ex Argento, or Auctoritate Publica. EXER. Exercitus. ETR. Etruſcus.

F. Filius, or Filia, or Felix, or Faciendum, or Fecit. FEL. Felix. FELIC. Felicitas. FL. Flavius. FLAM. Flamen. FORT. RED. Fortunæ Reduci. FOVRI. Fourius for Furius. FONT. Fonteius. FRVGIF. Frugiferæ (Cereri). FVL. Fulvius. FVLG. Fulgerator.

G. Gneius, Genius, Gaudium. GA. Gaditanus. G. D. Germanicus Dacicus. GEN. Genius. GERM. Germanicus. GL. E. R. Gloria Exercitus Romani. GL. P. R. Gloria Populi Romani. GOTH. Gothicus. G. P. R. Genio Populi Romani. G. T. A. Genius Tutelaris Ægypti, or Africæ.

HEL. Helvius. HELI. Heliopolis. HER. Herennius, or Herennia. HO. HONOS. HS. Seſtertius.

I. Imperator, Jovi, Julius. IAN. CLV. Janum Cluſit for cluſit. IMP. Imperator. IMPP. Imperatores. I. O. M. K. Juno Soſpita, Mater or Magna Regina. IT. Italia, Iterum. ITE. Iterum. IVL. Julius or Julia. IVST. Juſtus. I. S. Seſtertius. I. O. M. SACR. Jovi Optimo, Maximo, Sacrum. III. VIR. Duumvir. III. VIR. R. P. C. Trium vir Reipublicæ Conſtituendæ. IIII. VIR. A. P. F. Quatuorvir, or Quatuorviri, Aëro, or Argento, or Ære, Publico Feriundo. IVN. Junior.

L. Lucius. LAT. Latinus. LEG. PROPR. Legatus Proprætoris. LEG. I. &c. Legio Prima, &c. LEP. Lepidus. LENT. CVR. X. F. Lentulus Curavit Denarium Faciundum. LIBERO P. Libero Patri. LIB. PVB. Libertas Publica. LIC. Licinius. L. S. DEN. Lucius Siciniuſ Dentatus. LVC. Lucifera. LVD. CIR. Ludi Circenſes. LVD. EQ. Ludi Equeſtres. LVD. SAEC. F. Ludos Sæculares Fecit.

M. Marcus, or Marius. MAR. CL. Marcellus Clodius. M. F. Marci Filius. M. OTACIL. Marcia Otacilia. MAG. or MAGN. Magnus. MAC. Macellum. MAX. Maximus. MAR. Martia (aqua). MAR. VLT. Marti Ultori. MES. Meſſius. METAL. Metallum. MINAT. Minatius. MINER. Minerva. M. M. T. V. Municipes Municipii Julii Uticenſis. MON. or MONET. Moneta.

N. Nepos or Noſter. N. C. Nobiliſſimus Cæſar. NAT. VRB. Natalis Urbis. NEP. Nepos. NEP. RED. Neptuno Reduci.

O. Optimo. OB. C. S. Ob Cives Servatos. OF. Officina. OPEL. Opelius. ORB. TER. Orbis Terrarum.

P. or POT. Poteſtate. PAC. ORB. TER. Pacatori Orbis Terrarum. PAPI. Papius or Papirius. PARTH. Parthicus. PERP. Perpetuus. PERT. or PERTIN. Pertinax. PESC. Peſcennius. P. F. Pius Felix. PLAET. Plætonius. P. L. N. Pecunia Londini Notata. P. LON. S. Pecunia Londini Signata. P. M. or PONT. MAX. Pontifex Maximus. POMP. Pompeius. P. P. Pater Patriæ. PR. Prætor. P. R. Populus Romanus. PRAEF. CLAS. ET OR. MARIT. Præfectus Claſſis et Oræ Maritimæ. PRINC IVVENT. Princeps Juventutis. PRIV. Privernum. PROC. Proconſul. PRON. Pronepos. PROP. Proprætor. PROQ. Proquæſtor. PROV. DEOR. Providentia Deorum. PVPIEN. Pupienus.

Q. Quintus, or Quæſtor. Q. C. M. P. I. Quintus Cæcilius Metellus Pius Imperator. Q. DESIG. Quæſtor Deſignatus. Q. P. Quæſtor Prætorius. Q. PR. Quæſtor Provincialis.

R. Roma, Reſtituit. RECEP. Receptis, or Receptus. REST. Reſtituit. ROM. ET AVG. Romæ et Auguſto. R. P. Reſpublica.

SAEC

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SAEC. AVR. Saeculum Aureum. SAEC. FEL. Saeculi Felicitas. SAL. Salus. SALL. Salluftia. SARM. Sarmaticus. S. C. Senatus Conſulto. SCIP. ASIA. Scipio Aſiaticus. SEC. ORB. Securitas Orbis. SEC. PERP. Securitas Perpetua. SEC. TE. Securitas Temporum. SEN. Senior. SEPT. Septimius. SER. Servius. SEV. Severus. SEX. Sextus. SIC. V. SIC. X. Sicut Quinquennalia, ſic Decennalia. SIG. Signis. S. mi Signata Moneta. S. P. Q. R. Senatus Populuſque Romanus. STABIL. Stabilita (Æra). SYLL. Sylla.

T. Titus, Tribunus. TER. Terentius, or Tertium. TEMP. Temporum. TIB. Tiberius. TR. or TRIV. Treveris. TREB. Trebonianus. TR. MIL. Tribunus Militaris. TR. P. or TRIB. POT. Tribunicia Poteſtate.

V. Quintum. V. C. Vir Clariſſimus. VESP. Veſpaſianus. VIB. Vibius. VICT. Victoria. VII. VIR. EPVL. Septemvir Epulonum. VIL. PVB. Villa Publica. VIRT. Virtus. VN. MR. Venerandæ Memoriæ. VOT. X. MVLT. XX. Votis Decennalibus Multiplicatis Vicennalibus.

X. Decem, Denarius. XV. VIR. SACR. FAC. Quindecim Vir Sacris Faciundis.

Abbreviations on the Exergua, from Banduri and Monaddini. Pinkerton.

A. Officina Prima. ALEX. Alexandria. AMB. Antiochenſis Moneta Secundæ Officinæ. AN. ANT. ANTI. Antioceia. ANB. Antiochiæ Secunda Officina; or ANH. Antiochiæ Octava Officina. A. P. L. (In officina) Prima percuſſa Lugduni. AQ. AQL. Aquileia. AQ. O. B. F. Aquileiæ Officinæ Secundæ Fabrica. AQ. P. S. Aquileiæ Pecunia Signata. AQ. S. Aquileiæ Signata. A. AR. ARL. Arelate. A. SISC. Prima (in officina) Siſciæ.

B. SIRM. Secunda Sirmii, B. S. L. C. Secunda Signata Lugduni.

C. Θ Conſtantinopoli Nona. COMOB. Conflata Moneta Obryzo. Only on gold or ſilver from a gold dye. CON. Conſtantinopoli. CONOB. Conflata Obryzo. Only on gold. CONS. Conſtantinopoli.

KART. Carthago. K. O. Carthaginienſis Officina. L. LC. LVC. LVG. Lucduni, Lugduni. L. LON. Londini. L. P. Lugdunenſis vel. Londinenſis Pecunia. LVC. P. S. Lugduni Pecunia Signata.

MDPS. Mediolani Pecunia Signata. M. K. V. T. Moneta Kartaginenſis Urbis (in officina) Tertia. M. L. Moneta Lugdunenſis vel Londinenſis MOST T. Moneta Officinæ Secundæ Treverorum. MSTR. Moneta Signata Treveris.

O. Officina. OFF. III. CONST. Officina Tertia Conſtantinopoli.

PARL. Percuſſa or Pecunia Arelate. PLON. Pecunia Londinenſis. PLVG. Pecunia Lugdunenſis. P. R. Pecunia Romana, or Percuſſa Romæ, P. T. Pecunia Trevirenſis.

Q. AR. Quinta Arelatenſis (officina).

R. RO. ROM. Romæ. RA. Ravennæ. ROPS. Romæ Pecunia Signata.

S. AR. Arelate Signata. S. CONST. Signata Conſtantinopoli. SIS. Siſciæ. SS. P. Siſcienſis Pecunia. SISC. V. Siſcia Urbs. SMA. Signata Moneta Antiochiæ. S. M. HER. Signata Moneta Heracleæ. S. M. N. Signata Moneta Nicomediæ. S. M. R. Signata Moneta Romæ. S. T. Signata Treveris.

TESOB. Theſſalonicæ Officina Secunda, THEOPO. Theopoli. TR. Treveris Officina Secunda.

TABLE VII. *A Liſt of* ROMAN COLONIES *whoſe* COINS *remain.*

Abdera in Spain. Acci in Spain. Achulla in Africa. Ælia Capitolina in Judæa. Agrippina in Germany. Antiochia in Piſidia. —— in Syria. Apamea in Bithynia. Arna in Theſſaly. Aſtigi in Spain.

Babba in Mauritania Tingitana. Berytus in Phœnicia. Bilbilis in Spain. Boſtra in Arabia. Bracara Auguſta in Spain. Buthrotum in Epirus.

Cabellio in Gaul. Cæſar-Auguſta in Spain. Cæſarea in Paleſtine. Calagurris in Spain. Calpe in Spain. Camelodunum in Britain. Carrhæ in Meſopotamia. Carteia in Spain. Carthago in Africa. Carthago Nova in Spain. Caſcantum in Spain. Caſſandria in Macedon. Celſa in Spain. Clunia in Spain. Coillu in Numidia. Comana in Cappadocia. Corinthus in Greece. Cremna in Piſidia. Culla in Thrace.

Damaſcus in Coloſyria. Dertoſa in Spain. Deulton in Thrace. Dium in Macedon.

Ebora in Spain. Edeſſa in Meſopotamia. Emerita in Spain. Emeſa in Phœnicia. Ergavica in Spain. Germe in Galatia. Graccuris in Spain.

Hadrumetum in Africa. Heliopolis in Cœloſyria. Hippo Regius in Africa.

Iconium in Lycaonia. Ilerda in Spain. Illergavonia in Spain. Illeci in Spain. Iol in Mauritania. Italica in Spain.

Laelia in Spain. Laodicea in Syria. Leptis in Africa. Lugdunum in Gaul.

Neapolis in Paleſtine. Nemauſis in Gaul. Neſibis in Meſopotamia. Norba Cæſarea in Mauritania.

Obulco in Spain. Oea in Africa. Olba in Pamphylia. Oſca in Spain. Oſicerda in Spain.

Panormus in Sicily. Parium in Myſia. Paralis in Lycaonia, Patricia (Corduba) in Spain. Pella in Macedon. Philippi in Macedon. Philippopolis in Arabia. Ptolemais in Phœnicia.

Ruſcino in Gaul. Romula (Hiſpalis) in Spain. Rheſæna in Meſopotamia.

Sabaria in Hungary. Saguntum in Spain. Sebaſte in Paleſtine. Segobriga in Spain. Sidon in Phœnicia. Singara in Meſopotamia. Sinope in Pontus. Stobi in Macedon.

Tarraco in Spain. Theſſalonica in Macedon. Traducta (Julia) in Spain. Troas in Phrygia. Turiaſo in Spain. Tyana in Cappadocia. Tyrus in Phœnicia.

Valentia in Spain. Vienna in Gaul. Viminacium in Mœſia. Utica in Africa.

TABLE VIII. ABBREVIATIONS *on* COLONIAL COINS.

ACCI. Accitana Colonia, *Guadix in Spain.* ADI. Adjutrix *legio.* AEL. MVN. COEL. Ælium Municipium Cœla, *near Cyſtus on the Helleſpont.* AST. Aſtigitana, *Ecija* in Andeluſia.

B. A. Bracara Auguſti, *Braga in Portugal.*

C. A. Cæſarea Antiochiæ. C. A. A. P. or PATR. Colonia Auguſta Aroe Patrenſis. CAB. Cabellio. C. A. BVT. Colonia Auguſti Buthrotum, *in Epirus.* C. A. C. Colonia Auguſta Cæſarea. C. A. I. Colonia Auguſta Julia, *Cadiz.* C. A. E. Colonia Aug. Emerita, *Merida.* CAL. Calagurris, *Calahorra in Spain.* C. A. O. A. F. Colonia Antoni-

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ana Oea Aug. Felix. *Tripolitana Africa.* C. R. PI. MET. SID. Colonia Æmilia Pia Metropolis Sidon. C. A. R. Colonia Augusta Rauracorum or Colonia Asta Regia: Augst in Switzerland, or Ast near Xeres de la Frontera in Spain. C. C. A. Colonia Cæsarea Augusta, *Saragossa, in Spain.* C. C. COL. LUG. Claudia Copia Colonia Lugdunensis. C. C. I. E. Colonia Campestris Julia Babba, *in Mauritania.* C. C. I. E. D. D. Colonia Campestris Julia Babba Decreto Decurionum. C. C. I. H. P. A. Colonia Concordia Hadrumetina, Pia Augusta. C. CIV. D. D. F. Corona Civica data Decreto Publico. C. C. N. A. Colonia Carthago Nova Augusta. C. C. N. C. D. D. Colonia Concordia, Norba Cæsareana, Decreto Decurionum. C. COR. Colonia Corinthus. C. C. T. Duocentesima Remissa. C. C. S. Colonia Claudia Sabaria, *in Hungary.* C. F. P. D. Colonia Flavia Pacensis Develtum. *Develtum in Thrace.* C. G. I. H. P. A. Colonia Gemella Julia Hadriana, Pariana, Augusta. C. I. C. A. Colonia Julia Concordia Apamea. C. I. A. D. Colonia Julia Augusta Dertona, *Tortona near Milan.* C. I. A. V. Colonia Julia Aug. *Cadiz.* C. L. AVG. F. SIN. Colonia Julia Augusta Felix Sinope. C. I. B. Colonia Julia Balba, *in Mauritania.* C. I. C. A. P. A. Colonia Julia Carthago Augusta Pia Antiqua, or Corinth, or Carthago Nova. C. I. CAL. Colonia Julia Calpe, *Gibraltar.* C. I. F. Colonia Julia Felix. *Cadiz.* C. I. G. A. Colonia Julia Gemella * Augusta. C. I. I. A. Colonia Immunis Illice Augusta, *Elche in Spain.* C. I. N. C. Colonia Julia Norba Cæsareana, or Alcántara: sometimes it means Col. Julia Nova Carthago. C. I. V. Colonia Julia Valentia, *Valencia in Spain.* C. V. T. Colonia Victrix Tarraco. C. L. I. COR. Colonia Laus Julia Corinthus. C. L. I. N. AVG. Colonia Laus Julia Nova Augusta, *Laus or Lodi in Lucania.* C. M. L. Colonia Metropolis Laodicea, *in Celosyria.* CO. DAM. METRO. Colonia Damascus Metropolis. COHH. PRET. VII. P. VI. F. Cohortes Prætorianæ Septimum Piæ, Sextum Felices. COH. I. CR. Cohors Prima Cretensis. COH. PRET. PHIL. Cohors Prætoriana Philippensium. COL. AEL. A. H. MET. Colonia Ælia Augusta Hadrumetina Metropolis, *in Africa.* COL. AEL. CAP. COMM. P. F. Colonia Ælia Capitolina Commodiana Pia Felix. COL. ALEX. TROAS. Colonia Alexandriana Troas. COL. AMAS. or AMS. Colonia Amastriana, *in Paphlagonia.* COL. ANT. *Antioch in Pisidia.* COL. ARELAT. SEXTAN. Colonia Arelate Sextanorum, *Arles.* COL. AST. AVG. Colonia Astigitana Augustana Augusta, *Ecija in Spain.* COL. AVG. FEL. BER. Colonia Augusta Felix Berytus. COL. AVG. FIR. Colonia Aug. Firma, *Ecija.* COL. AVG. IUL. PHILIP. Colonia Augusta Julia Philippensis. COL. AVG. PAT. TREVIR. Colonia Augusta Paterna Trevirorum, *Treves in Germany, sent from Paternum in Italy.* COL. AUR. KAR. COMM. P. F. Colonia Aurelia Karthago Commodiana Pia Felix, or Carcathum Commagene, or *Carrhæ in Asia.* COL. B. A. Colonia Bracara Augusta, *Braga.* COL. BRVT. L. V. Colonia Berytus Legio Quinta. COL. CAN. Colonia Canellio. COL. CAES. AVG. Colonia Cæsarea Augusta, *in Palestine.* COL. CAMALODVN. Colonia Camalodunum, *England.* COL. CASILIN. Colonia Casilinum, *Castellano in Italy.* COL. CL. PTOL. Colonia Claudia Ptolemais, *Acre in Phœnicia.* COL. DAMAS. METRO. Colonia Damascus Metropolis. COL. F. I. S. P. BARCIN. Colonia Flavia Julia Augusta Pia, Barcino or *Barcelona.* COL. FL. PAC. DEVLT. Colonia Flavia Pacensis Deultum, *Deultum in Thrace.* COL. HA. HE. T. Colonia Hadriana Mercurialis Thenitana, Mercuriali, *Fermo in Italy, and Thenæ in Africa.* COL. H. (OR HEL.) LEG. H. Colonia Heliopolis Legio Heliopolitana. COL. HEL. I. O. M. H. Colonia Heliopolis Jovi Optimo Maximo Heliopolitano. COL. IVL. AVG. C. I. F. COMAN. Colonia Julia Augusta Concordia Invicta Felix Comanorum, *drawn from Concordia in Italy, and sent to Comana in Cappadocia.* COL. IVL. AVG. FEL. CREMNA. Colonia Julia Augusta Felix Cremna, in *Pamphylia.* COL. IVL. CER. SAC. AVG. FEL. CAP. OECVM. ISE. HEL. Colonia Julia Certamen Sacrum Augustum Felix Capitolinum Oecumenicum Heliopolitanum. COL. IVL. CONC. APAM. AVG. D. D. Colonia Julia Concordia Apamea Augusta Decreto Decurionum. COL. IVL. PATER. NAR. Colonia Julia Paterna Narbonensis. COL. NEM. Colonia Nemausus. COL. NICEPH. COND. Colonia Nicephorium Condita, *in Mesopotamia.* COL. PATR. Colonia Patrensis or Patricia, *Patras in Greece*, or *Cordova in Spain.* COL. P. F. AVG. F. CAES. MET. Colonia Prima Flavia Aug. Felix Cæsarea Metropolis, in *Palestine.* COL. PL. F. AVG. CAES. METROP. P. S. P. *same as above*, P. S. P. *is* Provinciæ Syriæ Palestinæ. COL. PR. F. A. CÆSAR. Colonia Prima Flavia Augusta Cæsarea, *in Palestine.* COL. R. F. AVG. FL. C. METROP. Colonia Romana Felix Aug. Flavia Cæsarea Metropolis. *The same.* COL. ROM. Colonia Romulea, or *Seville.* COL. ROM. LVG. Colonia Romana Lugdunum. COL. RVS. LEG. VI. Colonia Ruscino Legio Sexta, *Rouffillon in France.* COL. SABAR. Colonia Saburæ. COL. SABAS. Sebaste *in Palestine.* COL. SER. G. NEAPOL. Colonia Servii Galbæ Neapolis, *in Palestine.* COL. V. I. CELSA, or COL. VIC. IVL. CELSA. Colonia Victrix Julia Celsa, *Xelsa in Spain.* COL. VIC. IVL. LEP. Colonia Victrix Julia Leptis, *in Africa.* COL. VIM. AN. I. or II. &c. Colonia Viminacium Anno primo. *Widin in Servia.* COL. VLP. TRA. Colonia Ulpia Trajana: *Esseg*, or *Warbal, in Transylvania.* CO. P. F. CAE. METRO. Colonia Prima Flavia Cæsarea Metropolis. CO. P. I. A. Colonia Patensis Julia Augusta, or Col. Octaviana. C. R. I. F. S. Colonia Romana Julia Felix Sinope. C. T. T. Colonia Togata Tarraco. C. V. IL. Colonia Victrix Illice, *Elche in Spain.*

D. Decuriones. D. C. A. Divus Cæs. Aug. DERT. Dertosa.

GEN. COL. NER. PATR. Genio Coloniæ Neronianæ Patrensis. G. L. S. Genio Loci Sacrum.

M. H. ILLERGAVONIA DERT. Municipium Hiberæ Illergavonia Dertosa, *Tortosa in Catalonia.* M. M. I. V. Municipes Municipii Julii Uticensis. M. R. Municipium Ravennatium. MVN. CAL. IVL. Municipium Calagurris Julia, *in Spain.* MVN.

* Gemella *implies a Colony drawn from two others.*

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MVN. CLVN. Municipium Clunia, *Found in Spain.* MVN. FANE. ÆL. Municipium Fanestre Ælium, *Rome.* MVN. MVDR. Municipium Mobense, *Found in Mauritania.* MV. TVI. Municipium Turiasu, *in Spain.* M. VR. ALEXANDRINE COL. BOSTRE. Marcus Ulpius Alexandrinus Colonia Bostra, *in Palestine.* SEP. COL. LAVD. Septimia Colonia Laudicea, *or* Laodicea. SEP. TYR. MET. Septima Tyrus Metropolis.

NUN NUN

NUMISTRO, an ancient town of Italy, inhabited by the Brutii. *Liv. l. xxv. c. 19.*

NUMITOR, the son of Procas king of Alba, and the brother of Amulius. Procas, before his death, made him and Amulius joint heirs to the crown, on condition of their reigning annually by turns; but Amulius, on getting possession of the throne, excluded Numitor, whose son Laufus he put to death, and obliged ILIA, or RHEA SYLVIA, Numitor's only daughter, to become a vestal. This princess becoming pregnant, declared that she was with child by the god Mars; and afterwards brought forth Remus and Romulus, who at length killed Amulius, and restored Numitor to the throne, A. A. C. 754. See REMUS and ROME.

* NUMMARY. *adj.* [from *nummus*, Latin.] Relating to money.—Our ponderal libra remains as it was, though the *nummary* hath much decreased. *Arbuthnot on Coins.*

* NUMMULAR. *adj.* [*nummularius*, Latin.] Relating to money. *Dict.*

NUMMUS, [Lat.] *n. s.* a piece of money, used synonimously with *sestertius* and called *aureus*, golden, *argenteus*, silver, *æreus*, brazen, &c. according to the metal it was made of. See NUMISMATOGRAPHY, and SESTERTIUS.

* NUMSKULL. *n. s.* [Probably from *numb*, dull, torpid, insensible, and *skull*.] 1. A dullard; a dunce; a dolt; a blockhead.—They have talked like *numskulls*. *Arb. and Pope.* 2. The head. In burlesque.—

Or toes and fingers, in this case,
Of *numskull's* self should take the place. *Prior.*

* NUMSKULLED. *adj.* [from *numskull*.] Dull; stupid; doltish.—Hocus has saved that clod-pated, *numskulled*, ninny-hammer of yours from ruin. *Arbuthnot.*

(1.) NUN, the son of Elishamah, and father of Joshua, of the tribe of Ephraim, called NAVE by the Greeks.

(2.) * NUN. *n. s.* A woman dedicated to the severer duties of religion, secluded in a cloister from the world, and debarred by a vow from the converse of men.—

My daughters
Shall all be praying *nuns*, not weeping queens. *Shak.*

—A devout *nun* had vowed to take some young child, and bestow her whole life and utmost industry, to bring it up in strict piety. *Hammond.*—The most blooming toast in the island might have been a *nun*. *Addison's Freeholder.*—

Ev'ry shepherd was undone,
To see her cloister'd like a *nun*. *Swift's Mist.*

(3.) NUN. See MONASTERY, § 2. There were women in the ancient Christian church, who made public profession of virginity, before the monastic life was known in the world, as appears from the works of Cyprian and Tertullian. These, for distinction's sake, are sometimes called *ecclesiastical virgins*, and were commonly enrolled in the canon or matricula of the church. They differed from the monastic virgins chiefly in this, that they lived privately in their father's houses, whereas the others lived in communities; but their profession of virginity was not so strict as to make it criminal in them to marry afterwards, if they thought fit. As to the consecration of virgins, it had some things peculiar in it: it was usually performed publicly in the church by the bishop. The virgin made a public profession of her resolution, and then the bishop put upon her the accustomed habit of sacred virgins. One part of this habit was a veil, called *sacrum velamen*; another was a mitre or coronet worn upon the head. At present, when a woman is to be made a nun, the habit, veil, and ring of the candidate are carried to the altar; and she herself, accompanied by her nearest relations, is conducted to the bishop, who, after mass and an anthem, (the subject of which is, "that she ought to have her lamp lighted, because the bridegroom is coming to meet her,") pronounces the benediction: then she rises up, and the bishop consecrates the new habit, sprinkling it with holy water. When the candidate has put on her religious habit, she presents herself before the bishop, and sings on her knees, *Ancilla Christi sum*, &c.; then she receives the veil, and afterwards the ring, by which she is married to Christ; and lastly, the crown of virginity. When she is crowned, an anathema is denounced against all who shall attempt to make her break her vows. In some few instances, perhaps, nunneries and monasteries may have been useful to morality and religion, as well as to literature; but in the gross, they have been highly prejudicial; and however pious they may appear in theory, in fact they are unnatural and impious. It was surely never the intention of the Almighty to seclude youth and beauty in a cloistered ruin, or to deny them the innocent enjoyment of their age and sex.

(4.) * NUN. *n. s.* [*parus minor*.] A kind of bird. *Ainsw.*

(5.) NUN, in geography, or VLED DE NUN, a province of Africa, S. of Sus, from which it is separated by sandy deserts. The emperor of Morocco claims the sovereignty of it, but his authority is little regarded by the people who are tribes of wild Arabs, addicted to robbery and plunder, literally fulfilling the prophetic character given of their ancestor Ishmael, Gen. xvi. 12. European vessels are often driven on this coast by the rapid current between the Canaries and the continent, and frequently shipwrecked; when the savage natives not only plunder the vessels, but-

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but sell the people for slaves. The emperor of Morocco has in vain endeavoured to put a stop to these outrages. Many parts of the country are fertile, producing grain, gums, wax, &c.; and the people trade to Mogador for linens, &c.

* NUNCHION. *n. s.* A piece of victuals eaten between meals.—

Laying by their swords and truncheons,
They took their breakfasts or their *nunchions*.
Hudibras.

* NUNCIATURE. *n. s.* [from *nuncio*, Latin.] The office of a nuncio.

* NUNCIO. *n. s.* [Italian, from *nuncio*, Latin.] 1. A messenger; one that brings tidings.—

She will attend it better in thy youth,
Than in a *nuncio* of more grave aspect. *Shak.*

—They honoured the *nuncios* of the spring. *Brown.* 2. A kind of spiritual envoy from the pope.—This man was honoured with the character of *nuncio* to the Venetians. *Atterbury.*

(1.) * NUNCUPATIVE. NUNCUPATORY. *adj.* [*nuncupatus*, Latin; *nuncupatif*, French.] Publicly or solemnly declaratory. 2. Verbally pronounced, not written.

(2.) NUNCUPATIVE, in the schools, means something that is only nominal, or has no existence but in name.

(3.) NUNCUPATIVE WILL or TESTAMENT, a will made verbally, and not put in writing. See TESTAMENT, and WILL.

NUNDINA, a goddess among the ancient heathens, supposed to have the care of the purification of infants. And because male infants were purified 9 days after their birth; her name is derived from *novus*, the 9th, though female infants were purified the 8th day; which purification was called LUSTRATIO by the Romans.

NUNDINÆ, or FERIÆ NUNDINARUM, in Roman antiquity, regular market days, held every 9th day. See next article, § 1.

(1.) NUNDINAL, *Nundinalis*, a name which the Romans gave to the eight first letters of the alphabet used in their kalendar. This series of letters, A, B, C, D, E, F, G, H, was placed and repeated successively from the first to the last day of the year; one of these always expressed the market-days, or the assemblies called *nundinæ*, *quasi novendinæ*, because they returned every 9 days. The country people, after working 8 days successively, came to town the 9th, to sell their commodities, and to inform themselves of what related to religion and government. Thus the nundinal day being under A on the 1st 9th, 17th, and 25th days of January, &c. the letter D will be the nundinal letter of the year following.

(2.) * NUNDINAL. } *adj.* [*nundinal*, Fr. from
* NUNDINARY. } *nundinæ*, Lat.] Belonging to fairs. *Dict.*

(1.) NUNDYDROOG, a large district of Indostan in Mysore.

(2.) NUNDYDROOG, a town and fort in the above district, which was besieged and taken by the British under Lord Cornwallis in Oct. 1791. See INDIA, § 28.

NUNEATON, a town of Warwickshire, with a market on Saturday, seated on the Anker, anciently famous for its abbey. It has a good free school, and lies 8 miles N. by E. of Coventry, and 99 NNW. of London. Lon. 1. 25. W. Lat. 52. 36. N.

NUNEHAM, a village of Oxfordshire, 5 miles E. by S. of Oxford; remarkable for its annual spinning festival, laudably instituted by the earl and countess of Harcourt for the encouragement of virtuous industry.

(1.) NUNEZ, or NUNO, a river of Africa, which divides the Nalos from Sierra Leona, and falls into the Atlantic; in Lon. 13. 30. W. Lat. 9. 34. N.

(2.) NUNEZ, a town of Spain in Catalonia.

(3, 4.) NUNEZ. See NONIUS, N° 2. and 3.

NUNHO, a river of Mexico. See MEXICO.

NUNIC MOUNTAINS, mountains of S. Carolina. Lon. 83° W. Lat. 35° N.

(1.) * NUNNERY. *n. s.* [from *nun*.] A house of nuns; of women under a vow of chastity, dedicated to the severer duties of religion.—I put your sister into a *nunnery*, with a strict command not to see you, for fear you should have wrought upon her to have taken the habit. *Beyd. Span. Fryar.*

(2.) NUNNERY. See CONVENT, MONASTERY, § 4; and NUN, § 3.

NUNO. See NUNEZ, N° 1.

NUNSBROUGH, a town of Northumberland, near Hexham; seated on the banks of the Tyne, on the brink of a precipice, 200 feet high, whence there is a fine prospect.

NUNWICH, a village of Northumberland, near the conflux of the Tyne and the Symondbourn; near which were discovered, several years ago, 5 natural stone pillars, arranged in a circular order, about 8 feet high, and 20 in circumference; supposed to have been Druidical relics.

NUOVO, MONTE, a mountain in the environs of Naples, which blocks up the valley of Averno. This mountain (Mr Swinburne tells us) arose in 1538, for after repeated quakings the earth burst asunder, and made way for a deluge of hot ashes and flames, which rising extremely high, and darkening the atmosphere, fell down again and formed a circular mould 4 miles in circumference, and 1000 feet high, with a large cup in the middle. The wind rising afterwards, wafted the lighter particles over the country, blasted vegetation, and killed the animals which grazed; the consequence was, that the place was deserted, till Don Pedro de Toledo, viceroy of Naples, encouraged the inhabitants by example and otherwise, to return. Part of Monte Nuovo is cultivated, but the larger portion of its declivity is wildly overgrown with prickly broom, and rank weeds that emit a very fetid sulphureous smell. The crater is shallow, its inside clad with shrubs, and the little area at the bottom planted with fig and mulberry trees; a most striking specimen of the amazing vicissitudes that take place in this extraordinary country. I saw no traces of lava or melted matter, and few stones within. Near the foot of this mountain the subterraneous fires act with such immediate power, that even the sand at the bottom of the sea is heated to an intolerable degree.

(1.) * NUPTIAL. *adj.* [*nuptial*, French; *nuptialis*, Latin.] Pertaining to marriage; constituting marriage; used or done in marriage.—

Confirm

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Confirm that amity
With *nuptial* knot. *Shak.*
—Propagation of families proceedeth from the *nuptial* copulation. *Bacon.*—
Then all in heat
They light the *nuptial* torch. *Milt. Par. Loſt.*
—Whoever will partake of God's ſecrets, muſt not eat of this ſacrifice with a defiled head, nor come to this feaſt without a *nuptial* garment. *Taylor.*—
Fir'd with her love, and with ambition led,
The neighb'ring princes court her *nuptial* bed. *Dryden.*
Let our eternal peace be ſeal'd by this,
With the firſt ardour of a *nuptial* kiſs. *Dryd.*

(2.) NUPTIAL BENEDICTION. See BENEDICTION, § 5.

(3.) NUPTIAL RITES, the ceremonies attending the ſolemnization of marriage, which are different in different ages and countries.

(4.) * NUPTIALS. *n. ſ.* like the Latin without ſingular. [*nuptiæ*, Lat.] 1. Marriage.—
My better *nuptials*, which, in ſpite of fate,
For ever join me to my dear Morat. *Dryd.*
2. It is in Shakeſpeare ſingular, but contrarily to uſe.—
Lift up your countenance, as 'twere the day
Of celebration of that *nuptial*, which
We two have ſworn ſhall come. *Shak. W. Tale.*

NUR, a town and mountain of Bukharia, 100 miles NNE. of Bukharia.

(1.) NURA, a river of Italy, which runs into the Po, 6 miles NE. of Placentia.

(2.) NURA, a river of Ruſſia, which runs into Lake Kargaldzin.

(1.) NUREMBERG, a country of Germany, and circle of Franconia, which is conſiderably extenſive, containing, beſides two conſiderable foreſts of pine, called the *Sibald* and *Laurence Foreſts*, 5 towns, and above 500 villages, and 160 miles on the Pegnitz. Part of this territory, particularly the capital, with its ſuburbs, and the cities of Wendſhein and Weiſſemberg, were claimed upon a pretended right of 200 years old, and ſeized by the K. of Pruſſia, in ſummer 1796, during the ſucceſs of the French; but in autumn following, upon their being repulſed by the Auſtrians, he withdrew his troops, and evacuated theſe territories.

(2.) NUREMBERG, or NUREMBURG, an ancient imperial city of Germany, capital of the above territory, as well as of Franconia, ſeated on the Pegnitz, over which it has ſeveral bridges, both of wood and ſtone, at the bottom of a hill. It is thought by ſome to be the SEGONUSUM; and by others the CASTRUM NORICUM, of the ancients. The city has its name from the hill, upon which ſtands this caſtle, called *Caſtrum Noricum*, round which the city was begun to be built, and where the emperors formerly lodged; and where they lodge ſtill, when they paſs by that city. They there preſerve, as precious relics, the crown, ſceptre, clothes, buſkins, and other ornaments of Charlemagne; particularly a mitred crown, enriched with rubies, emeralds, and pearls; the dalmatic robe of Charlemagne, richly embroidered; the imperial mantle, powdered with embroidered eagles, and its border thick ſet with large emeralds, ſapphires, and topazes; the buſkins covered with plates of gold; the gloves embroidered; the apple, the golden ſceptre, and ſword. The ancient cuſtom of the empire is, that the emperor is bound to aſſemble in this city the firſt diet that he holds after his election and coronation. Theſe regalia ſerved alſo the emperor Leopold, when he went thither after his election, to receive the homage of the city. The ſmall river PEGNITZ, which runs through it, and thoſe of Rednitz and Schwarzack, which paſs by its walls, furniſh the inhabitants, beſides other advantages, with the means of making all ſorts of ſtuffs, dyes, and other manufactures and toys of wood, ivory, and metal, which are exported even as far as the Indies. The city is large and well built. Its fortifications are a triple wall of hewn ſtone, flanked with towers mounting cannon, and a deep moat. The magiſtrates, and moſt of the inhabitants, are Lutherans. There are many elegant churches and chapels in it. In that of St Sebald is a braſs monument of the ſaint, and a picture, repreſenting the creation, by the celebrated Albert Durer, who was a native: but the fineſt church in the town is that of St Giles. In that of the Holy Ghoſt are kept moſt of the jewels of the empire, together with the ſpear with which they pretend our Saviour's ſide was pierced, a thorn of his crown, and a piece of the manger wherein he was laid. Here are alſo many hoſpitals, one in particular for pilgrims; with a gymnaſium, an anatomical theatre, a granary, a fine public library, the old imperial fortreſs, ſome remains of the old citadel, ſeveral ſchools, an academy of painting, a well furniſhed arſenal, and a mint. Mr Keyſler ſays, there are upwards of 500 ſtreets in it, about 140 fountains, 16 churches, 44 religious houſes, 12 bridges, 10 market-places, and 25,000 inhabitants. The houſes are elegant; the ſtreets wide and clean. The trade of this city, though upon the decline, is ſtill very great, many of its manufactures being exported to all parts of the world. When the emperor Henry VI. aſſiſted at a tournament in Nuremberg, he raiſed 38 burghers to the degree of nobility. Their deſcendants are called *patricians*, and have the government of the city entirely in their hands; the whole council, except 8 maſters of companies, who are ſummoned only on extraordinary occaſions, conſiſting of them. This council conſiſts of 42 members, of whom 34 are patricians; over whom 2 caſtellans, or perpetual ſeneſchals, preſide. From theſe a *ſeptemvirate*, or ſecret council of *ſeven*, are choſen, who are entruſted with the moſt important buſineſs of the *republic*, as they affect to call this little ariſtocratic ſtate. Among the fine braſs cannon in the arſenal, is one that is charged at the breech, and may be fired 8 times in a minute; and two that carry balls of 80 lb. The city keeps, in conſtant pay, 7 companies, conſiſting each, in time of peace, of 100 men, but, in time of war, 185; two troops of cuiraſſiers, each conſiſting of 85 men; and two companies of invalids. There are alſo 24 companies of burghers, well armed and diſciplined. On the new bridge, which coſt 100,000 guilders, are two pyramids, on the top of one of which is a dove with an olive branch, and on the other an imperial black eagle.

Nuremberg

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Nuremberg had a seat and voice at the diets of the empire and circle, paying to the chamber of Wetzlar 872 six-dollars each term.

NUREMBERGERS, the natives of Nuremberg, who are remarkably ingenious in painting and engraving in ivory, wood, and metal.

NUREMBERGS, *n. s.* Toys of wood, very ingeniously made at Nuremberg, which are sold in Germany, and thence through all Europe. These toys have an incredibly great sale, and afford a livelihood to the greatest part of the inhabitants, who make a very considerable profit from this traffic.

NUREMBURG. See NUREMBERG, N° 1. 2.

NURLINGEN, a town of Suabia, in Wurtemberg, on the Neckar, with a rich hospital. In 1473 and 1751, it was greatly damaged by fire; and in 1634, it was ravaged by the imperialists. It lies 14 miles SE. of Stutgard, and 60 E. of Strasburg. Lon. 26. 58. E. of Ferro. Lat. 48. 33. N.

NURMO, a town of Germany, in the duchy of Courland, 28 miles E. of Goldingen.

NURSÆ, an ancient town of Italy. *Virg. Æn.* vii. 744.

NURSCIA, a goddess and patroness of the ancient Etrurians. *Juv.* x. 74.

* NURSE. *n. s.* [*nourrice*, Fr.] 1. A woman that has the care of another's child.—Unnatural curiosity has taught all women but the beggar to find out *nurses*, which necessity only ought to commend. *Raleigh.* 2. A woman that has care of a sick person.—

A page so kind, so duteous, diligent,
So-feat, so *nurse*-like. *Shak.*

—One Mrs Quickly, which is in the manner of his *nurse*, or his dry *nurse*, or his cook. *Shak.* 3. One who breeds, educates, or protects.—

Rome, the *nurse* of judgment. *Shak.*
We must lose
The country, our dear *nurse*, or else thy person,
Out comfort in the country. *Shak.*

4. An old woman, in contempt.—

Can tales more fenseless, ludicrous, and vain,
By winter fires old *nurses* entertain? *Blackmore.*

5. The state of being nursed.—

Can wedlock know so great a curse,
As putting husbands out to *nurse*? *Cleaveland.*

6. In composition, any thing that supplies food.—Put into your breeding pond three mekers for one spawner; but if into a *nurse* pond or feeding pond, then no care is to be taken. *Walton.*

* *To* NURSE. *v. a.* [from the noun, or by contraction from *nourish*; *nourrir*, Fr.] 1. To bring up a child or any thing young.—I was *nursed* in swaddling cloaths with cares. *Wisd.* vii. 4.—

Him in Egerian groves Aricia bore,
And *nurs'd* his youth. *Dryden.*

2. To bring up a child not one's own.—Shall I call a nurse of the Hebrew women, that she may *nurse* the child? *Ex.* ii. 7. 3. To feed; to keep; to maintain.—Thy daughters shall be *nursed* at thy side. *Is.* lx. 4.—

Our monarchs were acknowledged here,
That they their churches *nursing* fathers were. *Denham.*

The Nisæans in their dark abode,
Nurs'd secretly with milk the thriving god. *Addison.*

4. To tend the sick. 5. To pamper; to foment; to encourage; to soften; to cherish.—And what is strength, but an effect of youth, which if time *nurse*, how can it ever cease? *Davies.*—By what fate has vice so thriven amongst us, and by what hands been *nurs'd* up into so uncontroul'd a dominion? *Locke.*

* NURSER. *n. s.* [from *nurse*.] 1. One that nurses. Not used.—

See where he lies, inhersed in the arms
Of the most bloody *nurser* of his harms. *Shak.*

2. A promoter; a fomenter.

(1.) * NURSERY. *n. s.* [from *nurse*.] 1. The act or office of nursing.—

I lov'd her most, and thought to set my rest
On her kind *nursery*. *Shak.*

2. That which is the object of a nurse's care.—

She went forth among her fruits and flow'rs,
To visit how they prosper'd, bud and bloom,
Her *nursery*. *Milton.*

3. A plantation of young trees to be transplanted to other ground.—Your *nursery* of stocks ought to be in a more barren ground than the ground is whereunto you remove them. *Bacon.*—My paper is a kind of *nursery* for authors. *Addison.* 4. Place where young children are nursed and brought up.—

I' th' swathing cloaths, the other from their *nursery*
Were stolen. *Shak.*

—You see before you the spectacle of a Plantagenet, who hath been carried from the *nursery* to the sanctuary, from the sanctuary to the direful prison. *Bacon.*—

Forthwith the devil did appear,
Not in the shape in which he plies
At miss's elbow when she lies,
Or stands before the *nurs'ry* doors,
To take the naughty boy that roars. *Prior.*

—They have public *nurseries*, where all parents are obliged to send their infants to be educated. *Swift.* 5. The place or state where any thing is fostered or brought up, from a *nursery* of children; or whence any thing is to be removed, from a *nursery* of trees.—The keeping of cows is of itself a very idle life, and a fit *nursery* for a thief. *Spenser.*—

To see fair Padua, *nursery* of arts. *Shak.*

—A luxurious court is the *nursery* of diseases. *L'Estrange.*—

A *nursery* erects its head,
Where queens are form'd, and future heroes bred. *Dryden.*

(2.) *A* NURSERY, in gardening (§ 2. *def.* 3.), is a piece of land set apart for raising and propagating all sorts of trees and plants, to supply the garden and other plantations.

NURSIA, an ancient town of Italy, in Picenum; now called *Norsa*. *Virg. Æn.* vii. 716. *Liv.* xxviii. 45.

NURSING OF CHILDREN. See LACTATIO. The following observations are said to be the result of long experience. The child should be laid (the first month) upon a thin mattress, rather longer than itself, which the nurse will keep upon her lap, that the child may always lie straight, and only

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it up as the nurſe ſlants the matraſs. To ſet a child quite upright before the end of the firſt month, hurts the eyes, by making the white part of the eye appear below the upper eye-lid. Afterwards the nurſe may begin to ſet it up and dance it by degrees. The child muſt be kept as dry as poſſible. The clothing ſhould be very light, and not much longer than the child, that the legs may be got at with eaſe, to have them often rubbed in the day with a warm hand or flannel, and in particular the inſide of them. Rubbing a child all over takes off ſcurf, and makes the blood circulate. The one breaſt ſhould be rubbed with the hands one way, and the other the other way, night and morning at leaſt. The ankle-bones and inſide of the knees ſhould be rubbed twice a-day; this will ſtrengthen thoſe parts, and make the child ſtretch its knees and keep them flat, which is the foundation of an erect and graceful perſon. A nurſe ought to keep a child as little in her arms as poſſible, leſt the legs ſhould be cramped, and the toes turned inwards. Let her always keep the child's legs looſe. The oftener the poſture is changed, the better. Toſſing a child about, and exerciſing it in the open air in fine weather, is of the greateſt ſervice. In cities, children ſhould not be kept in hot rooms, but have as much air as poſſible. Want of exerciſe is the cauſe of large heads, weak and knotted joints, a contracted breaſt, which occaſions coughs and ſtuffed lungs, an ill ſhaped perſon, and waddling gait, beſides a numerous train of other ills. The child's body ſhould be kept perfectly clean, by conſtantly waſhing its limbs, neck, and ears; beginning with warm water, till by degrees it will not only bear, but like to be waſhed with cold. Riſing early in the morning is good for all children, provided they awake of themſelves, which they generally do; but they ſhould never be waked out of their ſleep; as ſoon as poſſible they ſhould be brought to regular ſleeps in the day. When laid in bed or cradle, their legs ſhould always be laid ſtraight. Children till they are two or three years old muſt never be ſuffered to walk long at a time, ſo as to be weary. Conſtant exerciſe and proper poſtures ought always to be attended to.

To NURSLE. *v. a.* To bring up; to nurſe; to fondle.

* NURSLING. *n. ſ.* [from *nurſe*.] One nurſed up; a fondling.—

Then was ſhe held in ſovereign dignity,
And made the *nurſling* of nobility. *Spenſer.*
I was his *nurſling* once, and choice delight,
His deſtin'd from the the womb. *Milton.*
Indulge their childhood, and the *nurſling* ſpare. *Dryden.*

* NURTURE. *n. ſ.* [contracted from *nourriture*, French.] 1. Food; diet.—

For this did the angel twice deſcend?
Ordain'd thy *nurture* holy. *Milt.*

2. Education; inſtitution. Little uſed.—She ſhould take order for bringing up of wards in good *nurture*. *Spenſer.*—

Yet am I inland bred,
And know ſome *nurture*. *Shak.*

* *To* NURTURE. *v. a.* [from the noun.] 1. To educate; to train; to bring up.—Thou brought eſt it up with thy righteouſneſs, and *nurtureſt* it in thy law. 2. *Eſdr.* viii. 12.—He was *nurtured* where he had been born. *Wotton.*—When an inſolent deſpiſer of diſcipline, *nurtured* into impudence, ſhall appear before a church governor, ſeverity and reſolution are that governor's virtues. *South.* 2. To *nurture up*; to bring by care and food to maturity.—They ſuppoſe mother earth to be a great animal, and to have *nurtured up* her young offspring with a conſcious tenderneſs. *Bentley.*

NUS, a town of France, in the dep. of Doria, and late duchy of Aoſta, in the ci-devant Piedmonteſe; 6 miles SE. of Aoſta.

NUSANCE. See NUISANCE.

NUSBACH, a river of Germany, in Suabia.

NUSCO, a town and biſhop's ſee of Naples, in Principato Ultra; 8 miles N. of Coſenza.

NUSDORF, a town of Auſtria; 3 miles NW. of Vienna.

NUSE. See NEUS.

NUSSERPOUR, a town and diſtrict of Indoſtand, on the Sinde; 20 miles SSW. of Moultan, and 47 NE. of Tatta. Lon. 68. 20. E. Lat. 25. 20. N.

* *To* NUSTLE. *v. a.* To fondle; To cheriſh. Corrupted from *nurſle*. See NUZZLE. *Ainſw.*

(1.) * NUT. *n. ſ.* [*hnut*, Saxon; *noot*, Dutch; *noix*, Fr.] 1. The fruit of certain trees; it conſiſts of a kernel covered by a hard ſhell. If the ſhell and kernel are in the centre of a pulpy fruit, they then make not a nut but a ſtone.

One chanc'd to find a *nut*,
In the end of which a hole was cut,
Which lay upon a hazle root. *Drayton.*

—Nuts are hard of digeſtion, yet poſſeſs ſome good medicinal qualities. *Arbuth.* 2. A ſmall body with teeth, which correſponds with the teeth of wheels.—This faculty may be more conveniently uſed by the multiplication of ſeveral wheels, together with *nuts* belonging unto each. *Wilkins.*—Clocks and jacks, though the ſcrews and teeth of the wheels and *nuts* be never ſo ſmooth, yet if they be not oiled, will hardly move. *Ray.*

(2.) NUT among botaniſts, denotes a PERICARPIUM of an extraordinary hardneſs, incloſing a kernel or ſeed. See BOTANY, § 170.

(3.) NUT, BLADDER. See STAPHYLÆA.
(4.) NUT, CASHEW. See ANACARDIUM.
(5.) NUT, COCOA. See COCOS, N° 1.
(6.) NUT, EARTH. See BUNIUM.
(7.) NUT, FAUSEL. See ARECA.
(8.) NUT, GROUND. See ARACHIS.
(9.) NUT, HAZEL. See CORYLUS.
(10.) NUT, MALABAR. See JUSTICIA.
(11.) NUT, PHYSIC. See JATROPHA, N° 6.
(12.) NUT, PIG. See BUNIUM.
(13.) NUT, PISTACHIA. See PISTACIA.

NUTATION, *n. ſ.* in aſtronomy, a kind of tremulous motion of the axis of the earth, firſt obſerved by Dr BRADLEY, whereby in each annual revolution, it is twice inclined to the ecliptic, and as often returns to its former poſition.

* NUTBROWN. *adj.* [*nut* and *brown*.] Brown like a nut kept long.—

Young and old come forth to play,
Till the live-long daylight fail,
Then to the ſpicy *nutbrown* ale. *Milton.*

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When the *nutbrown* ſword was out,
With ſtomach huge he laid about. *Hudibras.*

Two milk-white kids run friſking by her ſide,
For which the *nutbrown* laſs, Erithacis,
Full often offer'd many a ſavoury kiſs. *Dryden.*

King Hardycnute, 'midſt Danes and Saxons ſtout,
Carous'd on *nutbrown* ale, and din'd on grout. *King.*

NUTCRACKER, in ornithology. See CORVUS, § III, N° 2. and *plate* CCXLVI.

* NUTCRACKERS. *n. ſ.* [*nut* and *crack.*] An inſtrument uſed to encloſe nuts and break them by preſſure.—He caſt every human feature out of his countenance, and became a pair of *nutcrackers*. *Addiſon's Spectator.*

* NUTGALL. *n. ſ.* [*nut* and *gall.*] Hard excreſcence of an oak.—In vegetable excretions, maggots terminate in flies of conſtant ſhapes, as in the *nutgalls* of the outlandiſh oak. *Brown.*

(1.) * NUTHATCH. NUTJOBBER. NUTPECKER. *n. ſ.* [*picus martius.*] A bird. *Ainſworth.*

(2.) NUTHATCH, in ornithology. See SITTA, and *Plate* CCXXXVII.

* NUTHOOK *n ſ.* [*nut* and *hook.*] 1. A ſtick with a hook at the end to pull down boughs that the nuts may be gathered. 2. It was anciently, I know not why, a name of contempt.—

Nuthook, nuthook, you lie. *Shak.*

NUT-JOBBER. See NUTHATCH and SITTA.

(1.) * NUTMEG. *n. ſ.* [*nut* and *muguet*, Fr.] The nutmeg is the kernel of a large fruit not unlike the peach, and ſeparated from that and from its inveſtient coat, the mace, before it is ſent over to us; except that the whole fruit is ſometimes ſent over in preſerve, by way of ſweet-meat, or as a curioſity. There are two kinds of *nutmegs*; the male, which is long and cylindrical, but it has leſs of the fine aromatic flavour than the female, which is of the ſhape of an olive. *Hill.*—The ſecond integument, a dry and floſculous coat, commonly called mace; the fourth a kernel included in the ſhell, which lieth under the mace, is the ſame we call *nutmeg*. *Brown.*—

I to my pleaſant gardens went,
Where *nutmegs* breathe a fragrant ſcent. *Sandys.*

(2.) NUTMEG. (See MYRISTICA, N° 2.) The tree which produces this fruit was formerly thought to grow only in the Banda Iſlands. It is now paſt a doubt, however, that it grows in the iſle of France and in all or moſt of the iſles of the ſouth ſeas; as well as that a wild ſpecies of it grows at Tobago. (See *Plate* CCXXVI, *fig.* 1—3.) We refer thoſe who wiſh for farther information reſpecting the trade in this article to M. P. Sonnerat's account of a voyage to the Spice Iſlands and New Guinea, printed at Paris in 1775, &c. tranſlated into Engliſh, and printed at Bury St Edmond's in 1781, &c. and to Bougainville's voyage, and Dr Hakeſworth's compilation of Engliſh voyages. It is proper, here, however, to mention that the uſe of this article to exceſs is extremely dangerous.

NUTPECKER. See NUTHATCH and SITTA.

NUTRIA, an ancient town of Illyricum. *Polyb.* 2.

* NUTRICATION. *n. ſ.* [*nutricatio*, Lat.] Manner of feeding or being fed.—Beſides the teeth, the tongue of this animal is a ſecond argument to overthrow this airy *nutrication*. *Brown.*

* NUTRIMENT. *n. ſ.* [*nutrimentum*, Lat.] That which feeds or nouriſhes; food; aliment.—

Why ſhould it thrive and turn to *nutriment?* *Shak.*

—The ſtomach returns what it has received, in ſtrength and *nutriment*, diffuſed into all the parts of the body. *South.*—

Is not virtue in mankind
The *nutriment* that feeds the mind? *Swift's Miſcel.*

* NUTRIMENTAL. *adj.* [from *nutriment.*] Having the qualities of food; alimental.—By virtue of this oil vegetables are *nutrimental*; for this oil is extracted by animal digeſtion, as an emulſion. *Arb.*

(1.) NUTRITION. *n. ſ.* [from *nutritio*, *nutrio*, Lat. *nutrition*, Fr.] 1. The act or quality of nouriſhing, ſupporting ſtrength, or increaſing growth.—New parts are added to our ſubſtance to ſupply our continual decayings; nor can we give a certain account how the aliment is ſo prepared for *nutrition*, or by what mechaniſm it is ſo regularly diſtributed. *Glanville's Sceptis.*—The obſtruction of the glands of the meſentery is a great impediment to *nutrition*. *Arbuth. on Alim.* 2. That which nouriſhes; nutriment. Leſs properly.—

Fix'd like a plant on his peculiar ſpot,
To draw *nutrition*, propagate, and rot. *Pope.*

(2.) NUTRITION, in the animal œconomy, is the repairing the continual loſs which the different parts of the body undergo. The motion of the parts of the body, the friction of theſe parts with each other, and eſpecially the action of the air, would deſtroy the body entirely, if the loſs was not repaired by a proper diet, containing nutritive juices; which being digeſted in the ſtomach, and afterwards converted into chyle, mix with the blood, and are diſtributed through the whole body for its nutrition. In young perſons, the nutritive juices not only ſerve to repair the parts that are damaged, but alſo to increaſe them, which is called *growth*. In grown perſons, the cuticle is every where conſtantly diſquamating, and again renewing; and in the ſame manner, the parts rubed off, or otherwiſe ſeparated from the fleſhy parts of the body, are ſoon ſupplied with new fleſh; a wound heals, and an emaciated perſon grows plump and fat. Buffon, to account for nutrition, ſuppoſes the body of an animal or vegetable to be a kind of mould, in which the matter neceſſary to its nutrition is modelled and aſſimilated to the whole. As to the nature of this matter, he ſuppoſes that there exiſts in nature an infinite number of living organical parts, and that all organiſed bodies conſiſt of ſuch organical parts; that their exiſtence is conſtant and invariable; ſo that the matter, which the animal or vegetable aſſimilates to its ſubſtance, is an organical matter of the ſame nature with that of the animal or vegetable, which conſequently may augment its volume, without changing its form or altering the quality of the ſubſtance in the mould. As to the power that communicates it, there exiſt (ſays he) in nature certain powers, as that of gravity, that have no affinity with the external qualities of the body, but act upon the moſt intimate parts, and penetrate them

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them throughout, and which can never fall under the obſervation of our ſenſes. And laſtly, he ſuppoſes that the internal mould itſelf is reproduced, not only by a ſimilar power, but that it is the very ſame power that cauſes the unfolding and reproduction thereof: for it is ſufficient (proceeds he) that in an organized body that unfolds itſelf, there be ſome part ſimilar to the whole, in order that this part may one day become itſelf an organized body, altogether like that of which it is actually a part.

* NUTRITIOUS. *adj.* [from *nutrio*, Latin.] Having the quality of nouriſhing.—

O may'ſt thou often ſee
Thy furrows whiten'd by the woolly rain
Nutritious! *Philip.*

—The heat equal to incubation is only *nutritious*; and the *nutritious* juice itſelf reſembles the white of an egg in all its qualities. *Arbuth. on Alim.*

* NUTRITIVE. *adj.* [from *nutrio*, Lat.] Nouriſhing; nutrimental; alimental.—While the ſecretory or ſeparating glands are too much widened and extended, they ſuffer a great quantity of *nutritive* juice to paſs through. *Blackmore.*

* NUTRITURE. *n. ſ.* [from *nutrio*, Lat.] The power of nouriſhing. Not uſed.—Never make a meal of fleſh alone; have ſome other meat with it of leſs *nutriture*. *Harvey on Conſump.*

* NUTSHELL. *n. ſ.* [*nut* and *ſhell*.] 1. The hard ſubſtance that incloſes the kernel of the nut.—I could be bounded in a *nutſhell*, and count myſelf a king of infinite ſpace. *Shak. Hamlet.*—It ſeems as eaſy to me to have the idea of ſpace empty of body, as to think of the hollow of a *nutſhell* without a kernel. *Locke.* 2. It is uſed proverbially for any thing of little value.—A fox had me by the back, and a thouſand pound to a *nutſhell*, I had never got off again. *L'Eſtrange.*

NUTTER MOHR, a town of Germany, in Eaſt Friefland; 9 miles SE. of Embden.

(1.) * NUTTREE. *n. ſ.* [*nut* and *tree*.] A tree that bears nuts.—Of trees you ſhall have the *nuttree* and the oak. *Peacham.*—

Like beating *nuttrees*, makes a larger crop.
Dryden.

(2.) NUT-TREE. See CORYLUS.

(1.) NUX, [Lat.] A Nut. See BOTANY, *Index*; and NUT.

(2.) NUX MOSCHATA. See MYRISTICA, and NUTMEG.

(3.) NUX PISTACIA. See PISTACIA.

(4.) NUX VOMICA, a flat, compreſſed, round fruit, about the breadth of a ſhilling, brought from the Eaſt Indies. It is found to be a certain poiſon for dogs, cats, &c. and it is not to be doubted that it would alſo prove fatal to mankind. Its ſurface is not much corrugated; and its texture is firm like horn, and of a pale greyiſh-brown colour. It is ſaid to be uſed as a ſpecific againſt the bite of a ſpecies of water ſnake. It is conſiderably bitter and deleterious; and has been uſed in doſes from five to ten grains twice a-day or ſo, in intermittents, particularly quartans, and in contagious dyſentery. The STRYCHNUS IGNATII is a tree of the ſame kind, producing gourd-like fruit, the ſeeds of which are improperly called St Ignatius's beans. Theſe, as alſo the woods or roots of ſome ſuch trees, called *lignum colubrinum*, or *ſnakewood*, are very narcotic bitters, like the nux vomica.

(1.) NUYS, a town of Germany, in the circle of the Lower Rhine, and ci-devant electorate of Cologne, now included in the French empire, and dep. of the Roer; ſeated on the Erfft, 5 miles SW. of Duſſeldorf, and 22 NNW. of Cologne. Lon. 6. 52. E. Lat. 51. 11. N.

(2.) NUYS, or NUITZ, a town of France, in the dep. of Cote d'Or, famous for its wines; 42 miles S. of Dijon, and 18 WSW. of Auxonne.

NUZZER, or NUZZERANAH, a preſent or offering from an inferior to a ſuperior. In Hindoſtan no man ever approaches his ſuperior for the firſt time on buſineſs, without an offering of a gold or at leaſt a ſilver rupee in his right hand; which, if not taken, it is a mark of diſfavour. Nuzzeranah is alſo uſed for the ſum paid to the government as an acknowledgment for a grant of lands or any public office.

* *To* NUZZLE. *v. a.* [This word, in its original ſignification, ſeems corrupted from *nurſle*; but when its original meaning was forgotten, writers ſuppoſed it to come from *nozzle* or *noſe*, and in that ſenſe uſed it.] 1. To nurſe; to foſter.—Old men long *nuzzled* in corruption, ſcorning them that would ſeek reformation. *Sidney.* 2. To go with the noſe down like a hog.—He charged through an army of lawyers, ſometimes with ſword in hand, at other times *nuzzling* like an eel in the mud. *Arbuth. John Bull.*—Sir Roger ſhook his ears, and *nuzzled* along, well ſatisfied that he was doing a charitable work. *J. Bull.*—

The bleſſed benefit, not there confin'd,
Drops to the third, who *nuzzles* cloſe behind.
Pope.

NY, two towns of Sweden, in Warmeland; the one 36 miles NW. the other 53 N. of Carlſtadt.

NYBELLED, a town of Sweden, in Smaland.

NYBORG. See NYEBORG.

NYBY, a town of Sweden, in E. Gothland.

NYCHTHEMERON, among the ancients, ſignified the whole natural day, or day and night, conſiſting of 24 hours, or 24 equal parts. (See DAY, § 2.) This way of conſidering the day was particularly adopted by the Jews, and ſeems to owe its origin to that expreſſion of Moſes, in the firſt chapter of Geneſis, "the evening and the morning were the firſt day."—Before the Jews had introduced the Greek language into their diſcourſe, they uſed to ſignify this ſpace of time by the ſimple expreſſion of a night and a day. It is proper here to obſerve, that all the eaſtern countries reckoned any part of a day of 24 hours for a whole day; and ſay a thing that was done on the 3d or 7th day, &c. from that laſt mentioned, was one after three or ſeven days. And the Hebrews having no word which exactly anſwers to the Greek Νυχθήμερον, ſignifying "a natural day of 24 hours," uſe *night and day*, or *day and night*, for it. So that to ſay a thing happened after three days and three nights, was, with them, the ſame as to ſay it happened on the third day. This explains what is meant by "the Son of Man's being three days and three nights in the heart of the earth."

NYCTALOPES. } See MEDICINE, *Index*.
NYCTALOPIA. }

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NYCTANTHES, Arabian Jasmine, a genus of the monogynia order, belonging to the diandria class of plants; and in the natural method ranking with the 44th order, *Sapiariæ*. The corolla and calyx are octofid; the perianthium dicoccous. There are 5 species; the most remarkable of which are,

1. Nyctanthes arbor tristis, the *melancholy* or *sorrowful tree*. This shrub, the *pariatacu* of the Bramins, grows naturally in sandy places in India, particularly in Ceylon and Java, where it is produced in great abundance, and attains the height of 18 or 20 feet. It rises with a four-cornered stem, bearing leaves that are oval, and taper to a point. They stand opposite, on short foot-stalks; are of a shining brownish green on the upper side, a more vivid green on the under, and of a taste that is astringent and somewhat bitter. From the middle rib, on the under surface of the leaves, proceed on both sides a number of costulæ or smaller ribs, which run nearly to the margin, and mark the surface with the impression of their arched furrows. The flowers, which are white and highly odoriferous, having a sweet delectable smell, emulating the best honey, consist of one petal deeply divided into 8 parts, which are narrower towards the stalk, and dilated towards the summit. They stand upon foot-stalks, which emerge from the origin of the leaves; are rigid, obliquely raised towards the top, grow opposite in pairs, and are divided into 3 short lesser branches, which each supports 5 flowers placed close together, without partial foot-stalks. The fruit is dry, capsular, membranaceous, and compressed. It is generally asserted of this plant, that the flowers open in the evening, and fall off the succeeding day. Fabricius and Paludanus, however, affirm from actual observation, that this effect takes place only in such flowers as are immediately under the influence of the solar rays. Grimmius remarks, in his *Laboratorium Ceylonicum*, that the flowers of this tree afford a fragrant water, which is cordial, refreshing, and often employed with success in inflammations of the eyes. The tube of the flower, when dried, has the smell of saffron; and, being pounded and mixed with sanders wood, is used by the natives of the Malabar coast for imparting a grateful fragrancy to their bodies, which they rub or anoint with the mixture.

2. Nyctanthes sambac, is also remarkable for the fragrancy of its flowers, and is a native likewise of India. It is cultivated in our stoves, where it generally rises with a twining stem to the height of 18 or 20 feet. The leaves are opposite, simple, and entire, but in different parts of the plant assume different forms; the lower leaves being heart-shaped and blunt, the upper oval and sharp. The flowers are white, inexpressibly fragrant, and generally appear with us in the warm summer months. Strong loam is its proper soil. There is a variety of this species with a double flower, which is much larger and more fragrant than the former.

NYCTASTRATEGI, among the ancients, were officers appointed to prevent fires in the night, or to give alarm and call assistance when a fire broke out. At Rome they had the command of the watch, and were called *nocturni triumviri*, from their office and number.

NYCTEUS, in fabulous history, a son of Neptune by Celene, king of Lesbos, or Thebes; who married Amalthæa, by whom he had Nyctimene and Antiope, the mother of Amphion and Zethus. He was mortally wounded in battle by Epopeus, who had carried off Antiope.

NYCTICORAX, in ornithology, the night-raven; a species of Ardea.

NYCTIMENE, a daughter of Nycteus, who, having committed incest with her father by means of her nurse, was changed into an owl by Minerva. *Ovid. Met.* ii. 590.

NYD, a river of Norway, which runs into the North Sea at Drontheim.

NYDALA, a town of Sweden, in Smaland.

(1.) NYE, Nathanael, an English mathematician, who was master gunner of Worcester, under Charles II. He wrote a treatise, entitled, The Art of Gunnery, in 1670.

(2.) Nye, Philip, an English nonconformist, a native of Sussex, descended of a genteel family there, was born about 1596. After attending the grammar school, he was sent to Oxford, and entered a commoner of Brazen-nose College, in 1615, whence he removed to Magdalen-hall, under a puritanical tutor. He was admitted A. B. and A. M. in 1619 and 1622, about which time he entered into orders, and was, in 1620, curate of St Michael's church in Cornhill, London. Resolving, however, to reject the constitution of the church of England, he became obnoxious to all the censures of the episcopal court; to avoid which he went to Holland, in 1633. He continued at Arnheim till 1640; when, the power of the parliament beginning to prevail over the king, he returned home, and was soon after made minister of Kimbolton in Huntingdonshire, by Edward Lord Kimbolton, then earl of Manchester. In 1643, he was appointed one of the assembly of divines at Westminster, and became a great champion of the Presbyterians, and of the solemn league and covenant; and, having married the daughter of Stephen Marshall, was sent with his father-in-law into Scotland the same year, to expedite the taking of the covenant. Accordingly, he harangued the people, in some zealous speeches in favour of the covenant. After his return, both houses of parliament took the covenant the same year; when he preached a sermon in defence of it, showing its warrant from Scripture, and was rewarded with the rectory of Acton near London, in the room of Dr Daniel Featley, who was ejected. Not long after, however, Nye began to dislike the proceedings of the assembly, and dissented from them, opposing the discipline intended to be settled by them; and, closing with the Independents when they became the reigning faction, he paid his court to the grandees of the army, who often consulted him. In December 1647 he was sent by them, with Stephen Marshall, to the king at Carisbrook castle, in the Isle of Wight, in attendance upon the commissioners then appointed to carry the four dethroning votes, as they are now called; viz. 1. To acknowledge the war raised against him to be just; 2. To abolish episcopacy; 3. To settle the power of the militia,

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militia in perſons nominated by the two houſes; 4. To ſacrifice all thoſe that had adhered to him; for which ſervice they were rewarded with 500l. a-piece. Nye was alſo employed about that time by the ſame maſters to get ſubſcriptions from the apprentices in London, &c. againſt a perſonal treaty with the king, while the citizens of that metropolis were petitioning for one. In April 1648, he was employed, as well as Marſhall and Joſeph Caryl, by the Independents, to invite the ſecured and ſecluded members to ſit in the houſe again, but without ſucceſs. In 1653 he was appointed one of the triers for the approbation of public preachers; in which office he not only procured his ſon to be clerk, but, with the aſſiſtance of his father-in-law, obtained for himſelf a living of 400l. a-year. In 1654, he was joined with Dr Lazarus Seaman, Samuel Clark, Richard Vines, Obadiah Sedgwick, Joſeph Caryl, &c. as an aſſiſtant to the commiſſioners appointed by parliament to eject ſuch as were then called ſcandalous and ignorant miniſters and ſchoolmaſters in London. After the reſtoration in 1660, it was debated by the healing parliament, for ſeveral hours together, whether he and John Goodwin ſhould be excepted for life. The reſult was, that if Philip Nye, clerk ſhould, after the 1ſt Sept. 1660, accept or exerciſe any office, eccleſiaſtical, civil, or military, he ſhould, to all intents and purpoſes in law, ſtand as if he had been totally excepted for life. In Nov. 1662, he was ſuſpected to be engaged in Tongue's plot; but the ſuſpicion was never proved. He died in Cornhill, London, in Sept. 27. 1672, and was buried in the upper vault of the ſaid church.

NYEBORG, an ancient ſea port town of Denmark, on the E. coaſt of the iſle of Funen, built in 1175, on a bay of the Great Belt, ſurrounded with a rampart and ditch. It has the remains of an ancient palace, in which Chriſtian II. was born, and to the top of which he was carried up, while an infant, by a monkey, and brought down again unhurt. A wing of it ſerves as a magazine and arſenal. The famous diet in 1256 was held in it. The Swedes were defeated before it, in 1659. It is 10 miles E. of Odenſee, and 16 W. of Corſoer. Lon. 10. 15. E. Lat. 55. 22. N.

NYED, a town of Sweden, in Warmeland.

(1.) NYEKIOBING, an ancient town of Denmark, in the iſle of Falſter, on a narrow channel oppoſite Laland. It has a good trade, a free ſchool, and an ancient palace, in which ſeveral of the queens formerly reſided. It was plundered in 1288, and K. John held a congreſs in it with the Hanſe Towns, in 1507. Lon. 11. 51. E. Lat. 54. 50. N.

(2.) NYEKIOBING, a town of Denmark, in Zealand, which has a good harbour and conſiderable trade. Lon. 11. 44. E. Lat. 55. 57. N.

NYEVRE. See NIEVRE, N° 1, 2.

NYKARLEBY, a town of Sweden, in E. Bothnia, 70 miles SW. of Cajana; built by Guſtavus Adolphus, in 1620.

NYKIRK, a town of Sweden, in E. Gothland.

NYKOPING. See NIKIOPING.

NYKYL, a town of Sweden, in E. Gothland.

NYLAND, a province of Sweden, in Finland, lying on the gulf of Finland, W. of the province of Carelia. It is 130 miles long and 30 broad; and is fertile and populous. It contains 3 diſtricts. Helſingfors is the capital.

NYLEN, a town of France, in the dep. of the Dyle, and late prov. of Auſtrian Brabant, 6 miles WSW. of Herenthals.

NYL-GHAU, in zoology, a ſpecies of *antelope*, and claſſed in that genus, by Drs. Gmelin and Pallas, Meſſrs. Pennant, Kerr, &c. though others reckon it a ſpecies of Bos. "It ſeems" indeed, ſays Bewick, in his *Hiſt. of Quadr.* "to be of a middle nature between the cow and the deer, and carries the appearance of both in its form. In ſize, it is as much ſmaller than the one, as it is larger than the other: its body, horns, and tail, are not unlike thoſe of a bull; and the head, neck, and legs, are ſimilar to thoſe of a deer. See CAPRA, § VII, N° 14; and *Plate* LIX. Mr Bewick concludes his account of it by obſerving, that "It remains to be conſidered, whether this rare animal might not be propagated with ſucceſs in this country. That it will breed here is evident from experience; and if it ſhould prove docile enough to be eaſily trained to labour, its great ſwiftneſs and conſiderable ſtrength might be applied to the moſt valuable purpoſes."

NYLODESE, [*i. e.* New Lodeſe,] a town of Sweden, in W. Gothland; built in 1545, by emigrants from Old Lodeſe, and governed by its own laws. It was burnt by the Danes, in 1611.

NYM, a river of France, in the dep. of Forets, and late duchy of Luxemburg; which runs into the Sour, below Echternach.

NYMBURG, a town of Bohemia, on the Elbe. It was taken by the Saxons in 1634. Lon. 15. 34. E. Lat. 50. 10. N.

(1.) * NYMPH. *n. ſ.* [νυμφη; *nympha*, Lat.] 1. A goddeſs of the woods, meadows, or waters.—

And as the moiſture which the thirſty earth
Sucks from the ſea, to fill her empty veins,
From out her womb at laſt doth take a birth,
And runs a *nymph* along the graſſy plains. *Davies.*

2. A lady. In poetry.—

The *nymph* I dare not, need not name. *Waller.*

(2.) NYMPH, in entomology, that ſtate of winged inſects between their living in the form of a worm and their appearing in the winged or moſt perfect ſtate. The eggs of inſects are firſt hatched into a kind of worms or maggots; which afterwards paſs into the nymph ſtate, ſurrounded with ſhells or caſes of their own ſkins: ſo that, in reality, theſe nymphs are only the embryo inſects wrapped up in this covering, from which they at laſt get looſe, though not without great difficulty. During this nymph ſtate the creature loſes its motion. Swammerdam calls it *nympha aurelia*, or ſimply *aurelia*; and others give it the name of *chryſalis*, a term of the like import: (See CHRYSALIS, § I—VI.) but modern entomologiſts prefer the term PUPA to both. See ENTOMOLOGY, *Sect.* IV.

(3.) NYMPHS, in mythology, (§ 1. *def.* 1.) were certain inferior goddeſſes, inhabiting the mountains, woods, waters, &c. ſaid to be the daughters of Oceanus and Tethys. All the univerſe was repreſented as full of theſe nymphs, who are diſtinguiſhed into ſeveral ranks or claſſes. The general diviſion of them was into *celeſtial* and *terreſtrial*.

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reſtrial. The former were called URANIÆ, and were ſuppoſed to be intelligences that governed the heavenly bodies or ſpheres: The latter, called *Epigeiæ*, preſided over the ſeveral parts of the inferior world, and were divided into thoſe of the water and thoſe of the earth. The nymphs of the water were the OCEANITIDES, or nymphs of the ocean; the NEREIDS, the nymphs of the ſea; the NAIADS and *ephydriades*, the nymphs of the fountains; and the *limniades*, the nymphs of the lakes. The nymphs of the earth were the *oreades*, or nymphs of the mountains; the *napææ*, nymphs of the meadows; and the DRYADS and HAMADRYADS, who were nymphs of the foreſts and groves. Beſides theſe we meet with nymphs who took their names from particular countries, rivers, &c. as the *cithæroniades*, ſo called from mount CITHÆRON in Bœotia; DODONIDES, from Dodona; TIBERIADES, from the Tiber, &c. Goats were ſometimes ſacrificed to the nymphs; but their conſtant offerings were milk, oil, honey, and wine. The following account of nymphs is given in *Chandler's Greece*. "They were ſuppoſed to enjoy longevity, but not to be immortal. They were believed to delight in ſprings and fountains. They are deſcribed as ſleepleſs, and as dreaded by the country people. They were ſuſceptible of paſſion. The Argonauts landing on the ſhore of the Propontis to dine in their way to Colchos, ſent Hylas, a boy, for water, who diſcovered a lonely fountain, in which the nymphs Eunica, Malis, and Nycheia were preparing to dance; and theſe ſeeing him were enamoured, and, ſeizing him by the hand as he was filling his vaſe, pulled him in. The deities, their copartners in the cave, are ſuch as preſided with them over rural and paſtoral affairs.—The nymphs, it was the popular perſuaſion, occaſionally appeared; and NYMPHOLEPSY is characterized as a frenzy which aroſe from having beheld them. Superſtition diſpoſed the mind to adopt deluſion for reality, and gave to a fancied viſion the efficacy of full conviction. The foundation was perhaps no more than an indirect, partial, or obſcure view of ſome harmleſs girl, who had approached the fountain on a like errand with Hylas, or was retiring after ſhe had filled her earthen pitcher. Among the ſacred caves on record, one on mount IDA in Crete was the property of Jupiter, and one by Lebadea in Bœotia of Trophonius. Both theſe were oracular. (See TROPHONIUS.) But the common owners of caves were the nymphs, and theſe were ſometimes local. On Cithæron in Bœotia, many of the inhabitants were poſſeſſed by nymphs called SPHRAGITIDES, whoſe cave, once alſo oracular, was on a ſummit of the mountain. Their dwellings had generally a well or ſpring of water; the former often a collection of moiſture condenſed or exuding from the roof and ſides; and this, in many inſtances, being pregnant with ſtony particles, concreted, and marked its paſſage by incruſtations, the ground-work in all ages and countries of idle tales framed or adopted by ſuperſtitious and credulous people. A cave in Paphlagonia was ſacred to the nymphs who inhabited the mountains about Heraclea. It was long and wide, and pervaded by cold water, clear as cryſtal. There alſo were ſeen bowls of ſtone, and nymphs and their webs and diſtaffs, and curious work, exciting admiration. The poet who has deſcribed this grotto, deſerves not to be regarded, as ſervilely copying Homer; he may juſtly claim to rank as an original topographer. The piety of Archidamus furniſhed a retreat for the nymphs, where they might find ſhelter and proviſion, if diſtreſſed; whether the ſun parched up their trees, or Jupiter enthroned in clouds upon the mountain-top ſcared them with his red lightning and terrible thunder, pouring down a deluge of rain, or brightening the ſummits with his ſnow."

NYMPHÆ, in anatomy, two membranaceous parts, ſituated on each ſide the rima. They are of a red colour, and cavernous ſtructure, ſomewhat reſembling the wattles under a cock's throat. They are ſometimes ſmaller, ſometimes larger; and are contiguous to the præputium of the clitoris, and joined to the interior ſide of the labia. See ANATOMY, § 317.

(I.) NYMPHÆA, in antiquity, ſtructures about which the learned are not agreed. Some take them to have been grottos, deriving their name from the ſtatutes of the nymphs with which they were adorned; but that they were conſiderable works, appears from their being executed by the emperors, (ſee *Ammian*, *Victor*, and *Capitolinus*;) or by the city præfects. In an inſcription, the term is written *nymfium*. None of all theſe nymphæa have laſted down to our time, except one, diſcovered ſome years ago between Naples and Veſuvius. It is a ſquare building, with only one entrance, and ſome ſteps that went down to it. On the right hand, in entering towards the head, there is a fountain of the pureſt water; along which is laid a naked Arethuſa of the whiteſt marble; the bottom or ground is of variegated marble, and encompaſſed with a canal fed by the water from the fountain: the walls are ſet round with ſhells and pebbles of various colours; by the ſetting of which, as by ſo many ſtrokes in a picture, are expreſſed the 12 months of the year, and the 4 political virtues; alſo the rape of Proſerpine; Pan playing on his reed, and ſoothing his flock; beſides the repreſentations of nymphs ſwimming, ſailing, and wantoning on fiſhes, &c. It ſeems pretty evident that the nymphæa were public baths; for at the ſame time that they were furniſhed with pleaſing grottoes, they were alſo ſupplied with cooling ſtreams, by which they were rendered exceedingly delightful, and drew great numbers of people to frequent them. Silence ſeems to have been a particular requiſite there, as appears by this inſcription, *Nymphis loci, bibe, lava, tace.*

(II.) NYMPHÆA, in botany, the WATER LILY; a genus of the monogynia order, belonging to the polyandria claſs of plants; and in the natural method ranking under the 54th order, *Miſcellaneæ*. The corolla is polypetalous; the calyx tetraphyllous or pentaphyllous; the berry multilocular and truncated. There are 5 ſpecies; viz.

1. NYMPHÆA ALBA, the *white water lily*, is a native of Britain, and grows in lakes and ditches. The root has an aſtringent and bitter taſte, like thoſe of moſt aquatic plants that run deep into the mud. The Highlanders make a dye with it, of a dark cheſnut colour.

2. NYMPHÆA,

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2. Nymphæa, Lien-Hoa, or Nenufar, a native of China, is highly extolled in that country for its virtues, and ranked among those plants which are employed in the compoſition of *the liquor of immortality*. The ſeeds are there eaten as we eat filberts in Europe: they are more delicate when they are green, but harder of digeſtion; they are preſerved in many different ways with ſugar. The root of this plant is alſo admitted by the Chineſe to their tables: in whatever manner it be prepared, it is equally wholeſome. Great quantities are pickled with ſalt and vinegar, which they reſerve to eat with their rice. When reduced to powder, it makes excellent ſoup with water and milk. The leaves of the nenufar are much uſed for wrapping up fruits, fiſh, ſalt proviſion, &c. When dry, the Chineſe mix them with their ſmoking tobacco, to render it ſofter and milder.

3. Nymphæa Lotus, the Egyptian Lotus, with heart-ſhaped toothed leaves, thought to be peculiar to Egypt, is thus mentioned by Herodotus: "When the river Nile is become full, and all the grounds round it are a perfect ſea, there grows a vaſt quantity of lilies, which the Egyptians call *lotus*, in the water. After they have cut them, they dry them in the ſun; then, having parched the ſeed within the lotus, which is moſt like the poppy, they make bread of it, baking it with fire. The root alſo of the lotus is eatable, eaſily becoming ſweet, being round, and of the ſize of an apple." M. Savary mentions it as growing in the rivulets and on the ſides of the lakes; and there are two ſorts or varieties of the plant, the one with a white, the other with a bluiſh flower. "The calyx (he ſays) blows like a large tulip, and diffuſes a ſweet ſmell, reſembling that of the lily. The firſt ſort produces a round root like that of a potatoe; and the inhabitants of the banks of the lake Menzel feed upon it. The rivulets in the environs of Damietta are covered with this majeſtic flower, which riſes upwards of two feet above the water." The high veneration in which the *nymphæa lotos* was held by the Egyptians, is well known; and it is ſtill equally venerated by the Hindoos. Sir William Jones, in ſpeaking of Brimha, Viſhnou, and Shiva, as emblematical repreſentations of the Deity, ſays, "the nymphæa lotos was anciently revered in Egypt, as it is at preſent in Hindoſtan, Thibet, and Nepal. The Thibetians are ſaid to embelliſh their temples and altars with it; and a native of Nepal made proſtration before it on entering my ſtudy, where the fine plant and beautiful flowers lay for examination."

4. Nymphæa Lutea, the *yellow water lily*, is a native of Britain, growing in lakes and ditches. Linnæus tells us, that the ſwine are fond of the leaves and roots, and that the ſmoke of it will drive away crickets and blattæ, or cock-roaches, out of houſes.

5. Nymphæa Nelumbo, is a native of the Eaſt and Weſt Indies, called *Nelumbo* in Ceylon. The leaves which reſt upon the ſurface of the water are ſmooth, undivided, perfectly round, thick, target-ſhaped, and about one foot and a half in diameter. The footſtalk of the leaves is prickly; and inſerted, not into baſe, or margin, as in moſt plants, but in the centre of the lower diſk or ſurface. From this centre, upon the upper ſurface, iſſue, like rays, a great number of large ribs, or nerves, which, towards the circumference, are divided and ſubdivided into a ſmall number of very minute parts. The flowers are large, fleſh-coloured, and conſiſt of numerous petals, diſpoſed, as in the other ſpecies of water-lily, in two or more rows. The ſeed-veſſel is ſhaped like a top, being broad and circular above, narrow and almoſt pointed below. It is divided into ſeveral diſtinct cells, which form ſo many large round holes upon the ſurface of the fruit; each containing a ſingle ſeed.—With the flower of this plant, which is ſacred among the heathens, they adorn the altars of their temples: they paint their gods ſitting upon it, and make uſe of ſuch pictures to animate the minds of the pious upon their death-beds, and to raiſe their affections to heaven. The ſtalks, which are uſed as a pot herb, are of a wonderful length. The root is very long, extends itſelf tranſverſely, is of the thickneſs of a man's arm, jointed and fibrous, with long intervals betwixt the joints. The fibres ſurround the joints in verticilli or whirls.

(1.) NYMPHÆUM, in ancient geography, a ſacred place near Apollonia, in Illyricum, ſending forth continually fire in detached ſtreams from a green valley and verdant meadows. *(Plutarch.)* Dio Caſſius adds, that the fire neither burns up nor parches the earth, but that herbs and trees grow and thrive near it, and therefore the place is called *nymphæum*; near which was an oracle of ſuch a nature, that the fire, to ſhow that the wiſh was granted, conſumed the frankincenſe thrown into it: but repelled it, in caſe the deſire was rejected. It was there that a ſleeping ſatyr was once caught and brought to Sylla as he returned from the Mithridatic war. This monſter had the ſame features as the poets aſcribe to the ſatyr. He was interrogated by Sylla and his interpreters; but his articulations were unintelligible; and the Roman ſpurned from him a creature which ſeemed to partake of the nature of a beaſt more than that of a man.

(2.) Nymphæum, in antiquity, a public hall magnificently decorated, for entertainment, &c. and where thoſe who wanted convenience at home held their marriage feaſts; whence the name.

Nymph-Bank, a great fiſhing bank in the Iriſh ſea, ſituated about 10 leagues off the coaſt of the county of Waterford, and province of Munſter, 18 leagues SSE. of the high head of Dungarvan. It abounds with cod, ling, ſkate, bream, whiting, and other fiſh; and was diſcovered by Mr Doyle, who on July 15th 1736, ſailed to it, in company with ſeven men, on board the Nymph, a ſmall veſſel of about 12 guns. It is well adapted for a fiſhing company.

NYMPHEA, an iſland on the N. coaſt of Sardinia; 13 miles W. of Roſſa.

NYMPHIDIUS, Sabinus, a perſon of mean deſcent, but appointed by Nero colleague of Tigellinus in the command of the prætorian guards. About the time, however, that the German legions revolted from this deſpicable prince, he was alſo betrayed by Nymphidius, and abandoned by his

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his guards. Nymphidius pretended to espouse the cause of Galba, but after Nero's death, usurped the supreme authority. Galba, however, was again acknowleged and proclaimed, and Nymphidius, notwithstanding his artifices, detected and slain by the soldiers who were proclaiming Galba. See Nero, N° 11.

NYMPHIS, an ancient historian, born in Heraclea, who wrote a history of Alexander the Great, in 24 books. *Elian.* vii.

* NYMPHISH. *adj.* [From *nymph*.] Relating to nymphs; ladylike.—

Tending all to *nymphish* ware. *Drayton.*

NYMPHODORUS, an ancient historian, born in Syracuse, who wrote a history of Sicily.

NYMPHOLEPSY. See Nymph, § 3.

NYMPHOMANIA. See Medicine, *Index.*

NYNE. See New.

NYON, a considerable town of Switzerland, in the canton of Bern, and capital of a bailiwick so named, with a castle. It stands delightfully upon the edge of the lake of Geneva, in the very point where it begins to widen, and in a most charming country, commonly called *Pays de Vaud.* It was anciently called *Colonia Equestris Noiodunum*; and, as a proof of its antiquity, several Roman inscriptions and other ancient remains have been frequently discovered in the outskirts of the town. Lon. 5. 10. E. Lat. 46. 24. N.

NYONS, or Nions, a town of France, in the dep. of Drome, and late prov. of Dauphiny, at the foot of a mountain, on the Aigues, with a fine bridge of one arch erected by the Romans. It has a mineral spring called *Postias*, and manufactures, of woollen, soap, &c. It is 8 miles NW. of Buis, and 20 NW. of Orange. Lon. 5. 25. E. Lat. 44. 46. N.

NYQUAM, a town of Sweden, in Upland.

* NYS. [A corruption of *ne is.*] None is; not is. Obsolete.—

Thou findest fault, where *nys* to be found.

Spenser.

(1.) NYSA, or Nyssa, in ancient geography, a town of Ethiopia, S. of Egypt. Some place it in Arabia. This city, with another of the same name in India, was sacred to Bacchus, who was said to have been educated there by the nymphs of the place, and who received the name of *Dionysius*, from Διος Jupiter, and Νυσα, the place of his education. Bacchus made this place the seat of his empire, and the capital of the conquered nations of the east.

(2—10.) Nysa, or Nyssa, was also the name of other 9 towns. One of these was famous, on the coast of Euboea, for its vines, which grew in such an uncommon manner, that if a twig was planted in the ground in the morning, it immediately produced grapes, which were full ripe in the evening. Another was a city of Thrace; another seated on the top of Mount Parnassus, and sacred to Bacchus.

NYSÆUS, a surname of Bacchus, from Nysa, where he was worshipped.

NYSAS, a river of Ethiopia.

NYSLOT, a strong town of Russia, in Livonia, with a castle, seated on the Narva, among large marshes. Lon. 26. 55. E. Lat. 58. 46. N.

(1.) NYSSA, in botany; a genus of the order of dioecia, belonging to the polygamia class of plants; and in the natural method ranking under the 12th order, *Hederaceæ*. The hermaphrodite calyx is quinquepartite; there is no corolla; the stamina are five; there is one pistil; the fruit a plum inferior. The male calyx is quinquepartite, no corolla, and ten stamina. There is only one species, *viz.*

Nyssa aquatica, the tupelo tree. It is a deciduous tree or shrub, a native of moist or watery places in America, and consists of two varieties; 1. The entire-leaved; and 2. The serrated-leaved tupelo. 1. The *entire-leaved tupelo* tree, in its native soil and climate, grows to near 20 feet high; in this country its size varies according to the soil or situation. In a moist rich earth, well sheltered, it rises near to 20 feet; in others, that are less so, it makes slower progress, and is proportionally lower. The branches are not very numerous; and it rises with a regular trunk, at the top of which they generally grow. The leaves are of a lanceolated figure, and of a fine light-green colour. They end in acute points, and are very ornamental, of a thickish consistence, soft, grow alternately on pretty long footstalks, and often retain their verdure late in the autumn. The flowers, which are not very ornamental, are produced from the sides of the branches, growing sometimes singly, sometimes many together, on a footstalk. They are of a greenish colour; and, in the countries where they naturally grow, are succeeded by oval drupes, inclosing oval, acute, furrowed nuts. In England they seldom produce fruit. II. The *serrated-leaved tupelo* tree grows usually nearly 30 feet in height; and divides into branches near the top like the other. The leaves are oblong, pointed, of a light green colour, and come out without order on long footstalks. The flowers come out from the wings of leaves on long footstalks. They are small, of a greenish colour; and are succeeded by oval drupes containing sharp pointed nuts, about the size of a French olive. The propagation of these trees is from seeds, which come from America. As soon as they arrive, they should be sown in large pots of light sandy earth an inch deep. No plants come up the first spring. The gardener, after this work is done, should plunge his pots up to their rims in the natural ground; and if it be a moist place, it will be the better. Weeding must be observed during the summer; and a few furze bushes should be pricked round the pots in November, which will prevent the ground from freezing, and forward the coming up of the seeds. In the next spring, the pots should be plunged into a hot-bed, after which the seeds will soon appear. As much air as possible, and watering, should be afforded them; and they must be hardened soon to be set out. The pots should then be plunged to their rims again in the natural mould; where they are to remain till October. Watering must be given them; and they should also be shaded in the heat of the day. In October, they must be housed with other greenhouse plants, or else set under a hot-bed frame, or some other cover during winter. The 3d spring they should be taken out of the larger pots, and each planted in a smaller, in which their growth may

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may be affifted by a gentle heat in a bed; and if they are planted up to the rims in a moiſt place, and ſhaded in dry weather, they will grow very well. Though by this time they ſhould have become hardy, yet it will be proper to ſhelter them the winter following in bad weather. They require little care more during their ſtay in the pots, which may be either two, three, or more years, if they are large enough; when in ſpring they may be turned out, with the mould, into the places where they are to remain, which ought always to be moiſt and properly ſheltered.

(2, 3.) NYSSA. See NYSA, N° 1, 2.

NYSTADT, a town of Sweden, in Finland, on the Gulph of Bothnia, with a good harbour and great trade; 22 miles NW. of Abo. In 1721, a treaty of peace was concluded in it between Sweden and Ruſſia.

NYSTED, a town of Denmark, in Laland; which has a good trade to Germany. In 1560, and 1700 it ſuffered much by fire. It is 19 miles SE of Naſkow. Lon. 11. 40. E. Lat. 54. 45. N.

NYSUM, a town of Durham, on the Tees

NYU-CHE, or KIN, an empire which aroſe in eaſtern Tartary in the beginning of the 13th century. From the founder of this empire, the late Chineſe emperor Kang-hi ſaid that his family was deſcended. See CHINA § 9, 10, and TARTARY.

NYWICHWANNOCK, a river of the United States, which runs into the Piſcataqua.

O

(1.) * O Has in Engliſh a long ſound; as, *drone, groan, ſtone, alone, cloke, broke, coal, droll;* or ſhort, as *got, knot, ſhot, prong, long.* It is uſually denoted long by a ſervile *a* ſubjoined; as, *moan*, or by *e* at the end of the ſyllable; as, *bone:* when theſe vowels are not appended, it is generally ſhort, except before *ll;* as, *droll, ſcroll*, and even then ſometimes ſhort; as, *loll.* 1. *O* is uſed as an interjection of wiſhing or exclamation.—*O* that we, who have reſiſted all the deſigns of his love, would now try to defeat that of his anger!

Decay of Piety.

O! were he preſent, that his eyes and hands
Might ſee and urge the death which he commands. *Dryd.*

2. *O* is uſed with no great elegance by *Shakſpeare* for a circle or oval.—

Can this cockpit hold
The vaſty field of France? or may we cram
Within this wooden *O*, the very caſks
That did affright the air at Agincourt? *Shak.*

(2.) O is uſed, 1. As a letter; 2. as a numeral; 3. as an abbreviation; 4. as a patronymic in names; 5. as a mark in muſic; and 6. as a word. I. As a LETTER, O is the 14th in the alphabet and the 4th vowel. Its ſound is often ſo ſoft as to require it double, and that chiefly in the middle of words; as *goſe, reproof*, &c. And in ſome words this *oo* is pronounced like *u* ſhort, as in *flood, blood*, &c. The Greeks had two O's; viz. omicron, ο, and omega, ω; the firſt pronounced on the tip of the lips with a ſharper ſound; the ſecond in the middle of the mouth, with a fuller ſound, equal to *o* in our language. The long and ſhort pronunciation of our O are equivalent to the two Greek ones; the firſt, as in ſuppoſe; the 2d as in obey. II. As a NUMERAL, O was ſometimes uſed for 11 among the ancients; and with a daſh over it thus, $\overline{O}$, for 11,000. In modern arithmetic, it is uſed for the cypher and repreſents *nothing*, by which that ſcience and all others connected with it have been brought to their preſent ſtate of perfection. (See ARITHMETIC, *Index.*) III. As an ABBREVIATION, in the notes of the ancients, O. CON. is read *opus conductum*; O. C. Q. *opera conſilioque*; O. D. M. *operæ donum munus*; and O. LO. *opus locatum.* IV. Among the Iriſh, the letter O, at the beginning of the name of a family, is ſaid to be a character of dignity annexed to great houſes. Thus, in the hiſtory of Ireland, we frequently meet with the *O Neals, O Carrols*, &c. conſiderable houſes in that iſland. Cambden obſerves that it is the cuſtom of the lords of Ireland to prefix an O to their names, to diſtinguiſh them from the commonalty. But we rather ſuſpect the O prefixed to Iriſh names to be a PATRONYMIC ſyllable ſignifying *grandſon*, as *Oy* ſtill does in the old Scottiſh dialect, uſed in a ſimilar manner with *Mac*, in the Gaelic, which every body knows ſignifies *ſon.* V. In MUSIC, the ancients uſed O as a MARK of triple time; from a notion that the tenary, or number 3, was the moſt perfect of numbers, and therefore properly expreſſed by a circle, the moſt perfect of figures. It is not, ſtrictly ſpeaking, the letter O, but the figure of a circle ○, or double C○, by which the modern ancients in muſic uſed to expreſs what they called *tempo perfecto*, or triple time. Hence the Italians call it *circolo.* The ſeven antiphones, or alternate hymns of ſeven verſes, &c. ſung by the choir in the time of Advent, were formerly called *O*, from their beginning with ſuch an exclamation. VI. As a WORD O is uſed, 1. as a noun, the name of a town; 2. as an adverb of calling; and 3. as an interjection of ſorrow or wiſhing.

(3.) O, in geography, or ST MARTIN D'O, a town of France, in the dep. of the Orne, and diſtrict of Argentan.

OACCO, a town and province of Angola, in the kingdom of Benguela.

OACHATE, a ſea port of Ulietea.

* OAF. *n. ſ.* [This word is variouſly written: *auff, ofe*, and *oph*; it ſeems a corruption of *ouph*, a demon or fairy; in German *alf*, from which *elf*; and means properly the ſame with *changeling*; a fooliſh child left by malevolent *ouphs* or *fairies*, in the place of one more witty, which they ſteal away.] 1. A changeling; a fooliſh child left by the fairies.—

Theſe when a child haps to be got,
Which after proves an idiot,
When folk perceive it thriveth not,
The fault therein to ſmother:
Some ſilly doating brainleſs calf,
That underſtands things by the half,
Says that the fairy left this *oaf*,
And took away the other. *Drayton's Nymphid.*

2. A dolt; a blockhead; an idiot.

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* OAFISH. *adj.* [from *oaf.*] Stupid; dull; doltish.

* OAFISHNESS. *n. f.* [from *oafish.*] Stupidity; dulneſs.

OAHAHA, a river of Louſiania, which runs into the Miſſiſippi from the NW. in Lat. 39. 10. N.

OAHOO, or WOAHOO, one of the SANDWICH Iſlands, and the fineſt in the whole group, for the verdure of its hills, the variety of its woods and lawns, and rich cultivated valleys. It is ſuppoſed to contain above 60,000 inhabitants. Its harbour lies in Lon. 202. 9. E. Lat. 21. 43. N.

OAHOONA, one of the Ingraham iſles.

OAITIPHEA, a bay of Otaheite.

(1.) * OAK. *n. f.* [ac, æc, Saxon; which, ſays *Skinner*, to ſhow how eaſy it is to play the fool, under a ſhew of literature and deep reſearches, I will, for the diverſion of my readers, derive from οικος, a houſe; the oak being the beſt timber for building. *Skinner* ſeems to have had *Junius* in his thoughts, who on this very word has ſhewn his uſual fondneſs for Greek etymology, by a derivation more ridiculous than that by which *Skinner* has ridiculed him. *Ac* or *oak*, ſays the grave critic, ſignified among the Saxons, like *robur* among the Latins, not only an *oak* but *ſtrength*, and may be well enough derived, *non incommode deduci poteſt*, from αλκη, ſtrength; by taking the three firſt letters, and then ſinking the λ, as is not uncommon; *quercus.*]—The *oak*-tree hath male flowers, or katkins, which conſiſt of a great number of ſmall ſlender threads. The embryos, which are produced at remote diſtances from theſe on the ſame tree, do afterwards become acorns, which are produced in hard ſcaly cups; the leaves are ſinuated. The ſpecies are five. *Miller.*

He return'd with his brows bound with *oak*. *Shak.*

He lay along
Under an *oak*. *Shak.*

—No tree beareth ſo many baſtard fruits as the *oak*: for beſides the acorns, it beareth galls, *oak* apples, *oak* nuts, which are inflammable, and *oak* berries, ſticking cloſe to the body of the tree without ſtalk. *Bacon's Nat. Hiſt.*

The monarch *oak*, the patriach of the trees,
Shoots riſing up, and ſpreads by ſlow degrees;
Three centuries he grows, and three he ſtays
Supreme in ſtate; and in three more decays.
Dryden.

—An *oak*, growing from a plant to a great tree, and then lopped, is ſtill the ſame *oak*. *Locke.*—A light earthy, ſtony, and ſparry matter, incruſted and affixed to *oak* leaves. *Woodward on Foſſils.*—

Let India boaſt her plants, nor envy we
The weeping amber and the balmy tree,
While by our *oaks* the precious loads are born,
And realms commanded which thoſe trees adorn.
Pope.

(2.) OAK, in botany. See QUERCUS. The oak has been long known by the title of *monarch of the woods*. The ancient druids had a moſt profound veneration for oak trees; and ſome derive their very name from the old Britiſh word, *dru*, an oak. See DRUIDS, § 1, 11, Maximus Tyrius ſays the Celtæ or Gauls worſhipped Jupiter under the figure of a lofty oak. This uſeful tree grows to ſuch a ſurpriſing magnitude, that were there not many well authenticated inſtances of them from our own country, they would appear incredible. In the 18th vol. of the Gent. Mag. we have the dimenſions of a leaf 12 inches long, and 7 broad; and all the leaves of the ſame tree were equally large. On the eſtate of Woodhall, purchaſed in 1775 by Sir Thomas Rumbold, Bart. late governor of Madras, an oak was felled, which ſold for 43l. and meaſured 24 feet round. One in Millwood foreſt, near Chaddeſley, which was in full verdure in winter, got its leaves again after the autumn ones fell off. In Hunter's *Evelyn's Sylva*, we have an account of a very remarkable oak at Greendale; which Gough, in his edition of Cambden thus minutely deſcribes: "The Greendale oak, with a road cut through it, ſtill bears one green branch. Such branches as have been cut or broken off, are guarded from wet by lead. The diameter of this tree at the top, whence the branches iſſue, is 14 feet 2 inches; at the ſurface of the ground, 11½ feet; circumference there 35 feet; height of the trunk 53; height of the arch, 10, width 6. Mr Evelyn mentions ſeveral more oaks of extraordinary ſize in Worksop park." In the Gent. Mag. for 1773, we have an account of a ſpecies differing very eſſentially from the common one; it is frequent about St Thomas in Devonſhire, and is in that county called *Lucombe* oak, from one William Lucombe who ſucceſsfully cultivated it near Exeter. It grows as ſtraight and handſome as a fir; its leaves are evergreen, and its wood as hard as that of the common oak. Its growth is ſo quick, as to exceed, in 20 or 30 years, the altitude and girth of the common one at 100. It is cultivated in various places; Cornwall, Somerſetſhire, &c. M. Du Hamel Du Monceau, of the Royal Academy of Sciences at Paris, in his *Treatiſe on Huſbandry*, gave an account in 1749 of an oak which he had kept in water 8 years, and which yielded fine leaves every ſpring. The tree had 4 or 5 branches; the largeſt 19 or 20 lines round, and more than 18 inches long. It throve more in the two firſt years than it would have done in the beſt earth, but afterwards loſt its vigour, and decayed; which he attributed to a defect in the roots rather than to want of aliment. M. de Buffon made ſome experiments on oak trees; the reſult of which is recorded in the *Gentleman's Mag.* 1754. He had compared barked with unbarked trees; and proves, from a variety of trials, that timber barked and dried ſtanding, is always heavier, and conſiderably ſtronger than timber kept in its bark.

(3.) OAK, DWARF, a ſpecies of TEUCRIUM.

(4.) * OAK EVERGREEN. *n. f.* [*ilex.*]—The fruit is an acorn like the common *oak*. The wood of this tree is accounted very good for many ſorts of tools and u'enſils; and affords the moſt durable charcoal in the world. *Miller.*

(5.) OAK EVERGREEN is a ſpecies of ILEX.

(6, 7.) OAK OF CAPPADOCIA, a ſpecies of Ambroſia, and of Chenopodium. See AMBROSIA, § 1, and 4; and CHENOPODIUM, N° 1.

(8.) OAK OF JERUSALEM. See CHENOPODIUM, N° 3.

(9.) OAK, POISON. See RHUS, N° 7.

* OAKAPPLE. *n. f.* [*oak* and *apple.*] A kind of ſpongy excreſcence on the oak.—Another kind of excreſcence

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excreſcence is an exudation of plants joined with putrefaction, as in *oakapples*, which are found chiefly upon the leaves of oaks. *Bacon's Nat. Hiſt.*

Oak-Bark. *n. ſ.* the bark of the oak, which is very uſeful in tanning. See Tanning. The bark of oak trees was formerly thought to be extremely uſeful in vegetation. One load (Mr Mills in his treatiſe on huſbandry informs us) of oak-bark, laid in a heap and rotted, after the tanners have uſed it for dreſſing of leather, will do more ſervice to ſtiffen cold land, and its effects will laſt longer, than two loads of the richeſt dung; but this has been ſtrenuouſly controverted. (See Oak-Leaves.) The bark, in medicine, is alſo a ſtrong aſtringent; and hence is recommended in hæmorrhagies, alvine fluxes, and other præternatural or immoderate ſecretions; and in theſe it is ſometimes attended with good effects. Some have alleged, that by the uſe of this bark every purpoſe can be anſwered which may be obtained from Peruvian bark. But after ſeveral very fair trials, this is found not to be the caſe. Beſides the bark, the buds, the acorns, and their cups are uſed; as alſo the galls, which are excreſcences cauſed by inſects on the oaks of the eaſtern countries, of which there are diverſe ſorts; ſome perfectly round and ſmooth, ſome rougher with ſmall protuberances, but all generally having a round hole in them. All the parts of the oak are ſtyptic, binding, and uſeful in all kinds of fluxes and bleedings, either inward or outward. The bark is frequently uſed in gargariſms, for the relaxation of the uvula, and for ſore mouths and throats: it is alſo uſed in reſtringent clyſters and injections, againſt the prolapſus uteri or ani. The acorns, beaten to powder, are frequently taken by the vulgar for pains in the ſide. The only officinal preparation is the *aqua germinum quercus*.

Oak Bay, a promontory in the Bay of Fundi, 9 leagues SSE. of Mooſe Iſland. It is ſo high as to be ſeen 12 leagues diſtant.

OAKCHEYS, a town of the United States, in Georgia, 12 miles NNE. of Oakfuſkee.

* OAKEN. *adj.* [from *oak*.] Made of oak; gathered from oak.—No nation doth equal England for *oaken* timber wherewith to build ſhips. *Bacon.*—

By lot from Jove I am the pow'r
Of this fair wood, and live in *oaken* bow'r. *Milt.*

Clad in white velvet all their troop they led,
With each an *oaken* chaplet on his head. *Dryd.*

—An *oaken* garland to be worn on feſtivals, was the recompence of one who had covered a citizen in battle. *Addiſon.*—He ſnatched a good *oaken cudgel*, and began to brandiſh it. *Arbuthnot.*

(1.) * OAKENPIN. *n. ſ.* An apple.—*oakenpin*, ſo called from its hardneſs, is a laſting fruit, yields excellent liquor, and is near the nature of the Weſtbury apple, though not in form. *Mort.*

(2. Oakenpin, or Oaken Pippin. } See Pyrus, N° 4.

(1.) OAKFUSKEE, or Tallapoosee, a large river of Georgia, which riſes in the Cherokee country, and thence running SW. ruſhes over a cataract of 70 feet perpendicular height, and after running 45 miles farther, joins the Abacoochee, and forms the Alabama.

(2.) Oakfuskee, a town of Georgia, 159 miles W. of Auguſta. Lon. 85. 55. W. Lat. 33. 0. N.

(1.) OAKHAM, or Ockham. See Oakum.

(2.) Oakham, in geography, a townſhip of Maſſachuſetts, in Worceſter county, 15 miles NW. of Worceſter, and 62 W. of Boſton. It contained 772 citizens in 1795.

(3.) Oakham. See Okeham.

(1.) OAKHAMPTON, a town of Devonſhire, on the Oke, 24 miles W. of Exeter, and 195 W. by S. of London. It ſends two members to parliament. Lon. 4. 5. W. Lat. 50. 48. N.

Oakhamston Head, a cape of Scotland on the SE. coaſt of Caithneſs, 11 miles S. of Wick.

OAKINGHAM, or Wokingham, a town of Berkſhire near Wilts, with a market on Tueſday, containing about 1200 inhabitants. It is the chief town in Windſor Foreſt, and the foreſt courts are held in it. It has ſeveral ſilk mills, and a manufacture of denims. It is 7 miles ESE. of Reading, and 32. W. of London.

OAKINGTON, a town of Cambridgeſhire, 4 miles from Cambridge.

Oak Island, a narrow iſland on the coaſt of N. Carolina.

Oak Leaf Galls are of ſeveral kinds: the remarkable ſpecies, called the *muſhroom gall*, is never found on any other vegetable ſubſtance but theſe leaves; and beſides this there are a great number of other kinds. The double gall of theſe leaves is very ſingular, becauſe the generality of productions of this kind affect only one ſide of a leaf or branch, and grow all one way; whereas this kind of gall extends itſelf both ways, and is ſeen on each ſide of a leaf, in form of two protuberances, oppoſite the one to the other. Theſe are of differently irregular ſhapes, but their natural figure ſeems that of two cones, with broad baſes, and very obtuſe points, though ſometimes they are round, or very nearly ſo. Theſe make their firſt appearance on the leaf in April, and remain on it till June or longer. They are at firſt green, but afterwards yellowiſh, and are ſofter to the touch than many other of the productions of this kind; they are uſually about the ſize of a large pea, but ſometimes they grow to the bigneſs of a nut. When opened they are found to be of that kind which are inhabited each by one inſect only, and each contain one cavity. The cavity in this is, however, larger than in any other gall of the ſize, or even in many others of three times the ſize; the ſides of it being very little thicker than the ſubſtance of the leaf. It is not eaſy to aſcertain the origin of the ſeveral ſpecies of flies which are at times ſeen, in this manner to come out of the ſame ſpecies of galls. It ſeems the common courſe of nature, that only one ſpecies of inſect forms one kind of gall; yet it may be, that two or three kinds may give origin to the ſame kind. There is, however, another occaſion of our ſeeing different ſpecies come out of different galls of the ſame kind; and this is the effect of the enemies of the proper inhabitants. It might appear that the parent fly, when ſhe had formed a gall for the habitation of her worm-offſpring, had it placed in an impregnable fortreſs: but this is not the caſe; for it frequent-

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ly happens, that a fly, as ſmall perhaps as that which gave origin to the gall, produces a worm which is of the carnivorous kind, as the other feeds on vegetable juices. This little fly, well knowing that where there is one of theſe protuberances on a leaf, there is a tender and defenceleſs inſect within, pierces the ſides of the gall, and depoſits her egg within it. This, when it hatches into a worm, feeds upon the proper inhabitant; and finally, after devouring it, paſſes into the chryſalis ſtate, and thence appears in the form of its parent fly, and is ſeen making its way out of the gall, in the place of the proper inhabitant. On opening theſe leaf galls, which are properly the habitation only of one animal, it is common to find two, the ſtronger preying upon the body of the other, and ſucking its juices as it does thoſe of the leaf; often it is found wholly employed in devouring its unoffending neighbour at once: this is probably the caſe when its time of eating is nearly over; and, in fine, when we find the gall inhabited by only one inſect, or containing only one chryſalis, as it ought in its natural ſtate to do, we are never certain that this is the proper inhabitant, as it may be one of theſe deſtroyers who has eaten up the other, and ſupplied its place. See APHIS and PUCERON, N° 2.

OAK-LEAVES. The uſes of oak-bark in tanning and in hot-beds are generally known. For the latter of theſe purpoſes, however, oak-leaves are now found to anſwer equally well, or rather better. In the notes to Dr Hunter's edition of Evelyn's Treatiſe on Foreſt-trees, we find the following directions for their uſe by W. Speechly: the leaves are to be raked up as ſoon as poſſible after they fall from the trees. When raked into heaps, they ſhould immediately be carried into ſome place near the hot-houſes, where they may lie to couch. Mr Speechly ſays, it was his cuſtom to fence them round with charcoal hurdles, or any thing elſe, to keep them from being blown about the garden in windy weather. In this place they tread them well, and water them in caſe they happen to have been brought in dry. The heap is made 6 or 7 feet thick, and covered over with old mats, or any thing elſe, to prevent the upper leaves from being blown away. In a few days the heap will come to a ſtrong heat. For the firſt year or two in which he uſed theſe leaves, our author did not continue them in the heap longer than ten days or a fortnight; but by this method of management they ſettled ſo much when brought to the hot-houſe, that a ſupply was very ſoon required; and he afterwards found, that it was proper to let them remain 5 or 6 weeks in the heaps before they are to be watered, and again trodden down exceedingly well, in layers, till the pits are quite full. The whole is then covered with a tan bark, to the thickneſs of two inches, and well trodden down, till the ſurface becomes ſmooth and even. On this the pine-pots are to be placed in the manner they are to ſtand, beginning with the middle row firſt, and filling up the ſpaces between the pots with tan. In this manner we are to proceed to the next row, till the whole be finiſhed; and this operation is performed in the ſame manner as when tan only is uſed. The leaves require no farther trouble through the whole ſeaſon; as they will retain a conſtant and regular heat for 12 months without ſtirring or turning; and our author informs us, that if he may judge from their appearance when taken out (being always entire and perfect), it is probable they would continue their heat through a ſecond year; but, as an annual ſupply of leaves is eaſily obtained, the experiment is hardly worth making.

OAKLEY, 4 ſmall towns of England, in Bedford, Dorſet, Oxford, and Stafford ſhires.

(1.) OAKMULGEE, a river of Georgia, which joins the Okonee, and forms with it the S. great branch of the ALATAMAHEE. At Oakmulgee Fields it is about 400 yards broad.

(2.) OAKMULGEE FIELDS, an extenſive tract of rich and fertile ground in Georgia, on the E. banks of the above river, conſiderably above its conflux with the Okonee, where theſe two rivers are about 40 miles diſtance. This territory is remarkable for exhibiting ſurpriſing relics of the power and grandeur of the ancient American natives, in the ruins of ſeveral towns, with ſquares, banks, terraces, artificial mounds, &c. Theſe fields extend about 20 miles up the river.

OAK PUCERON. See PUCERON, N° 2.

OAK SAW-DUST is now found to anſwer the purpoſes of tanning as well, at leaſt, as the bark. See TANNING.

* OAKUM. *n. ſ.* [A word probably formed by ſome corruption.]—Cords untwiſted and reduced to hemp, with which, mingled with pitch, leaks are ſtopped.—They make their oakum wherewith they chalk the ſeams of the ſhips, of ſeer and weather-beaten ropes, when they are over ſpent, and grown ſo rotten as to ſerve for no other uſe but to make rotten *oakum*, which moulders and waſhes away with every ſea as the ſhips labour and are toſſed. *Raleigh.*—

Some drive old *oakum* thro' each ſeam and rift. *Dryden.*

OANNES, a being in Chaldean mythology, repreſented as half a man and half a fiſh. According to Beroſſus and others, this monſter was the civilizer of the Chaldeans; to whom he taught a ſyſtem of juriſprudence ſo perfect as to be incapable of improvement. See ANTEDILUVIANS, § 8; DELUGE, § 6; and MYTHOLOGY, § 24.

(1.) * OAR. *n. ſ.* [*are*, Saxon; perhaps by alluſion to the common expreſſion of plowing the water; from the ſame root with *ear*, to plow, *aro*, Lat.] A long pole with a broad end, by which veſſels are driven in the water, the reſiſtance made by the water to the oar puſhing on the veſſel.—

The *oars* were ſilver,
Which to the tune of flutes kept ſtroke. *Shak.*
So tow'rd a ſhip the *oar*-finn'd gallies ply. *Denham.*
Untaught Indians on the ſtream did glide,
E'er ſharp-keel'd boats to ſtem the flood did learn,
Or fin-like *oars* did ſpread from either ſide. *Dryden.*

—Its progreſſive motion may be effected by the help of ſeveral *oars*, which in the outward ends of them ſhall be like the fins of a fiſh to contract and dilate. *Wilkins.*

(2.) OAR. That part of the oar which is out of

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of the veſſel, and which enters into the water, is called the *blade*, or *waſh plat*; and that which is within board is termed the *loom*, whoſe extremity, being ſmall enough to be graſped by the rowers or perſons managing the oars, is called the *handle*. To puſh the boat or veſſel forwards by means of this inſtrument, the rowers turn their backs forward, and, dipping the blade of the oar in the water, pull the handle forward, ſo that the blade at the ſame time may move aft in the water: but ſince the blade cannot be ſo moved, without ſtriking the water, this impulſion is the ſame as if the water were to ſtrike the blade from the ſtern towards the head: the veſſel is therefore neceſſarily moved according to this direction. Hence it follows, that ſhe will advance with the greater rapidity, by as much as the oar ſtrikes the water more forcibly. Thus it is evident, that an oar acts upon the ſide of a boat or veſſel like a lever of the ſecond claſs, whoſe fulcrum is the ſtation upon which the oar reſts on the boat's gunnel. In large veſſels, this ſtation is uſually called the *row-port*; but in lights and boats it is always termed the *row-lock*.

(1.) * *To* OAR. *v. a.* [from the noun.] To impel by rowing.—

His bold head
'Bove the contentious waves he kept, and *oar'd*
Himſelf with his good arms, in lufty ſtrokes,
To th' ſhore. *Shak.*

(2.) * *To* OAR. *v. n.* To row.—

He more undaunted on the ruin rode,
And *oar'd* with labouring arms along the flood. *Pope.*

OARISTUS, or } a term in the Greek poetry,
OARISTYS, } ſignifying a dialogue between a huſband and his wife; ſuch as that in the ſixth book of the Iliad, between Hector and Andromache. Scaliger obſerves, that the oariſtus is not properly any particular little poem, or entire piece of poetry, but always a part of a great one. He adds, that the paſſage now cited in Homer is the only proper oariſtus extant in the ancient poets.

OARTS. See BOMBAY, § 18.

* OARY. *adj.* [from *oar*.] Having the form or uſe of oars.—

The ſwan, with arched neck,
Between her white wings mantling, proudly rows
Her ſtate with *oary* feet. *Milton.*
His hair transforms to down, his fingers meet
In ſkinny films, and ſhape his *oary* feet. *Addiſ.*

(1.) OASIS, the name of three diſtricts of Egypt, ſo called from their fertility; the word *oaſis* ſignifying "a fertile ſpot in a ſandy deſert." They produce barley, maize, dates, &c.

1. OASIS DAKILE, or the *Interior Oaſis*, lies near Upper Egypt, and has two villages.

2. OASIS EL OUAH, ſo named from OUAH its capital, lies three days journey W. of Ouſiout.

3. OASIS, THE MIDDLE, lies between the two preceding, and has two villages, called *El Kaſr* and *El Hindaw*.

(II.) OASIS is alſo the name of ſeveral fertile diſtricts of Africa, in SAHARA, or the Great Deſert.

* OAST. *n. ſ.* A kiln. Not in uſe.—Empty the bins into a hog-bag, and carry them immediately to the *oaſt* or kiln, to be dried. *Mortimer.*

OAT, *n. ſ.* is ſeldom uſed but in the plural. See OATS.

OATARA, an iſland in the South Sea, SE. of Ulietea, abounding with wood.

* OATCAKE. *n. ſ.* [*oat* and *cake*.] Cake made of the meal of oats.—Take a blue ſtone they make haver or *oatcakes* upon, and lay it upon the croſs bars of iron. *Peacham.*

* OATEN. *adj.* [from *oat*.] Made of oats; bearing oats.—

When ſhepherds pipe on *oaten* ſtraws,
And merry larks are ploughmens clocks. *Shak.*

OAT-GRASS, a ſpecies of BROMUS.

(1.) * OATH. *n. ſ.* [*aith*, Gothick; *ath*, Saxon. The diſtance between the noun *oath*, and the verb *ſwear*, is very obſervable, as it may ſhew that our oldeſt dialect is from different languages.] An affirmation, negation, or promiſe, corroborated by the atteſtation of the Divine Being.—

Read over Julia's heart, thy firſt beſt love,
For whoſe dear ſake thou then didſt rend thy faith
Into a thouſand *oaths*; and all thoſe *oaths*
Deſcended into perjury to love me. *Shak.*
All the *oath* rites ſaid,
I then aſcended her adored bed. *Chapman.*

—We have conſultations, which inventions ſhall be publiſhed, which not; and take an *oath* of ſecrecy for the concealing of thoſe which we think fit to keep ſecret. *Bacon.*—Thoſe called to any office of truſt are bound by an *oath* to the faithful diſcharge of it: but an *oath* is an appeal to God, and therefore can have no influence except upon thoſe who believe that he is. *Swift.*

(2.) *An* OATH is accompanied with an invocation of God to witneſs what we ſay; and with an imprecation of his vengeance, or a renunciation of his favour, if what we affirm be falſe, or what we promiſe be not performed. The laws of all civilized ſtates have required the ſecurity of an oath for evidence given in a court of juſtice; and the Chriſtian religion utterly prohibits ſwearing, except when oaths are required by legal authority.

(3.) OATH, CORONATION. See KING, § I. ii. 2.

(4.) OATH, LAWFULNESS OF. The Quakers and Moravians, ſwayed by the ſenſe which they put upon that text of Scripture (Matth. v. 34.) "*ſwear not at all*," refuſe to ſwear upon any occaſion, even at the requiſition of a magiſtrate, and in a court of juſtice. Theſe ſcruples are groundleſs, and proceed from not diſtinguiſhing between the proper uſe and abuſe of ſwearing. It is doubtleſs impious to call upon God to witneſs trifles, or to uſe his tremendous name as a mere *expletive* in converſation; but it does not follow that we may not ſolemnly call upon him to witneſs truths of importance. If it be lawful to aſk of God our daily bread, and other earthly bleſſings, it cannot ſurely be unlawful, where the lives or properties of our neighbours, or the ſecurity of government is concerned, to invoke him with reverence to witneſs the truth of our aſſertions, or the ſincerity of our intentions; becauſe of our truth and ſincerity, in doubtful caſes, none but he can be the witneſs.

(5.) OATHS, LEGAL DISTINCTION OF. All legal oaths are either *aſſertory* or *promiſſory*.

1. OATHS,

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i. OATHS, ASSERTORY, are required both to confirm our veracity in evidence, and to give security to the public that we *believe* certain propositions conceived to be of public importance. An oath in *evidence* binds the juror to declare what he *knows* to be true, and nothing *but* what he knows to be true. An oath required to assure the public of our *belief* in the *truth* of any proposition, cannot, without the guilt of perjury, be taken by any man, who, at the time of swearing, has the slightest doubt whether the proposition be really true. Such an oath, however, though it unquestionably requires the sincerity of the juror's belief at the time when it is given, cannot oblige him to continue in that belief as long as he may live; for belief is not in any man's power; it is the necessary consequence of evidence, which *compels* the assent of the mind, according as it appears to preponderate on the one side or on the other. No man, therefore, can be justly accused of perjury for holding opinions contrary to those which he may formerly have sworn to believe; because his belief at the time of emitting his oath may have been the necessary result of the evidence which then appeared before him; and his change of opinion may have resulted, with the same necessity, from superior evidence which had been since thrown into the opposite scale, and made it preponderate. On this account, we cannot help thinking, that all assertory oaths, except such as are necessary to confirm testimony respecting *facts*, ought either to be abolished or expressed with great caution. Of truths intuitively certain, or capable of rigid demonstration, no man of common sense can entertain a doubt; and therefore the public never requires from individuals the solemnity of an oath as an assurance of their believing such truths. But with respect to the truth of propositions which admit of nothing superior to moral evidence on either side, a man of the most steady virtue may think differently at different periods of his life; and in such cases, the effect of an oath, if it have any effect, can only be either to shut the man's eyes against the light, or to make his integrity be causelessly questioned by those who shall observe his change of belief.

ii. OATHS, PROMISSORY, cannot, without the guilt of perjury, be given by him, who, at the time of swearing, knows, that it will not be in his power to fulfil the promise, or who does not seriously intend to fulfil it. A promissory oath cannot, without great guilt, be given by any man, who, at the time of swearing, believes the object of the promise to be in itself unlawful; for if he seriously mean to fulfil his oath, he calls upon Almighty God to witness his intention to commit a crime. Promissory oaths give to the public greater security than a simple promise; because the juror, having the thoughts of God and of religion more upon his mind at the one time than at the other, offends with a higher hand, and in more open contempt of divine power, knowledge, and justice, when he violates an oath, than when he breaks a promise. Yet it is certain that promissory oaths, though more solemn and sacred, cannot be binding, when the promise without an oath would not be so in an inferior degree; for the several causes of which see ALLEGIANCE and PROMISE.

* OATHABLE. *adj.* [from *oath*. A word not used.] Capable of having an oath administered.—

You're not *oathable*,
Although I know you'll swear
Into strong shudders the immortal gods. *Shak.*

* OATHBREAKING. *n. f.* [*oath* and *break*.] Perjury; the violation of an oath.—

His *oathbreaking* he mended thus,
By now forswearing what he is forsworn. *Shak.*

OATHLAW, a parish of Scotland, in Angusshire, 2 miles from Fortar; 5 miles long and 2 broad; anciently called FINHAVEN, from a hill in it. The S. Esk runs through it. The surface is level; the soil clayey; the air moist. The population in 1790 was 430; decrease 5 since 1755. There are relics of a Roman camp in it, 1200 yards long and 600 broad. See BATTLE-DYKES.

OATLANDS, a village in Surry, near Weybridge.

* OATMALT. *n. f.* [*oat* and *malt*.] Malt made of oats.—In Kent they brew with one half *oatmalt*, and the other half barleymalt. *Mortimer.*

(1.) * OATMEAL. *n. f.* [*oat* and *meal*.] Flower made by grinding oats.—*Oatmeal* and butter, outwardly applied, dry the scab on the head. *Arbuthnot.*—

Our neighbours tell me oft, in joking talk,
Of ashes, leather, *oatmeal*, bran, and chalk. *Gay.*

(2.) * OATMEAL. *n. f.* [*panicum*.] An herb. *Ainsw.*

(1.) * OATS. *n. f.* [*aten*, Saxon.] A grain, which in England is generally given to horses, but in Scotland supports the people.—It is of the grass-leaved tribe; the flowers have no petals, and are disposed in a loose panicle; the grain is eatable. The meal makes tolerably good bread. *Miller.*—

The *oats* have eaten the horses. *Shak.*

—It is bare mechanism, no otherwise produced than the turning of a wild *oat*beard by the insinuation of the particles of moisture. *Locke.*—For your lean cattle, fodder them with barley straw first, and the *oat* straw last. *Mort. Husb.*—His horses allowance of *oats* and beans was greater than the journey required. *Swift.*

(2.) OATS, in botany. See AVENA, N° 7. Under this article it was observed, that the native place of the common oats is unknown; but Mr Bruce says he found oats in Arooffi, a small territory in Abyssinia, near the source of the Nile (see NILE), growing spontaneously to a prodigious height and size, capable often of concealing both the horse and his rider, and some of the stalks being little less than an inch in circumference.

(3.) OATS OF CAROLINA. See UNIOLA.

(4.) OATS, WILD BEARDED. See BROMUS.

* OATTHISTLE. *n. f.* [*oat* and *thistle*.] An herb. *Ainsw.*

OAXES, a river of Crete. *Virg. Ecl.* i. 66.

OAXUS, a town of Crete.

(1.) OB, [plural *Oboth*.] in Hebrew antiquity, a dæmon or familiar spirit. (See NECROMANCY, § 2.) The original or radical meaning of the word occurs in Job xxxii. 19, where Elihu compares his belly to *oboth*, new bottles. Hence some etymologists derive the name of OPS, the goddess of the *Earth*, and UPIS, a name of Diana, or the *Moon*.

(2.) OB, in Egyptian mythology. See MYTHOLOGY, § 38.

(3.) OB,

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(3.) OB, or OBY. See OBY.

OBA, a town of Perſia in Adirbeitzan.

(1.) OBADIAH, [Heb. עבד and יה, *i. e.* the ſervant of the Lord,] a valiant man of David's army, who came to join him in the wilderneſs, with ſeveral others of the tribe of Gad, (1 Chron. xii. 9.)

(2, 3.) OBADIAH, was alſo the name of one of thoſe whom king Jehoſhaphat ſent into the cities of Judah, to inſtruct the people in their religion; (2 Chron. xvii. 7.) as well as of one of the principal men of Judah, who ſigned the covenant that Nehemiah renewed with the Lord. (Nehem. x. 5.)

(4.) OBADIAH, the prophet, is believed to have been the ſame with the governor of Ahab's houſe, mentioned in the firſt book of Kings, (xviii. 3, &c.) who hid and fed the hundred prophets whom Jezebel would have deſtroyed; and ſome ſay, that he was that Obadiah whom Joſiah made overſeer of the works of the temple, (2 Chron. xxxiv. 12.) The truth is, that when he lived or propheſied is wholly uncertain: though moſt writers make him cotemporary with Hoſea, Amos, and Joel.

(5.) OBADIAH, THE PROPHECY OF, a canonical book of the Old Teſtament, which is contained in one ſingle chapter; and is partly an invective againſt the cruelty of the Edomites, who mocked and derided the children of Iſrael as they paſſed into captivity; and with other enemies, their confederates, invaded and oppreſſed thoſe ſtrangers, and divided the ſpoil amongſt themſelves; and partly a prediction of the deliverance of Iſrael, and of the victory and triumph of the whole church over her enemies.

OBAMA, a town of Japan, in Xiphon.

* OBAMBULATION, *n. ſ.* [*obambulatio*, from *obambulo*, Latin.] The act of walking about.

OBAMENE, a port on the E. coaſt of OTAHA.

(1.) OBAN, a flouriſhing village of Argyllſhire, on the NW. ſide of the pariſh of Kilmore, with a good harbour, on the BAY OF OBAN, protected from the ſtorms of the Weſtern Ocean by the iſland of KERRERA. It had only 2 or 3 houſes in 1766, when the cuſtom-houſe was built, but by the exertions of the D. of Argyll and Mr Campbell of Dunſtaffnage, in granting leaſes, and of two brothers of the name of Stevenſon, who ſettled in it in 1778, and eſtabliſhed manufactures, it increaſed in buildings, trade and population ſo faſt, that, in 1794, it had 111 families, and 586 ſouls. Ship-building, houſe-building, tanning, ſhoe-making, weaving, &c. are carried on in it. It has from 15 to 20 ſloops employed in the fiſhing and coaſting trade; and one ſhip of near 300 tons, in the Baltic trade. It is naturally well adapted for a fiſhing ſtation, as well as for a central market with the Highlands and Weſtern Iſles, as it lies on the road of coaſting veſſels, paſſing from N. to S. through the Sound of Mull, and being ſituated near the entrance of the great LOCH-LINNHE, has a communication with a very extenſive tract of country. The late patriotic traveller, Mr Knox, recommends it to the attention of the Britiſh Government, as one of the moſt proper ſituations in Great Britain for erecting a royal dock-yard and arſenal; from whence in times of war ſquadrons and tranſports with troops could be fitted out with the utmoſt ſecrecy and diſpatch, before the enemy could get the ſmalleſt intimation of the intended expedition. From its ſituation it has a ſpeedy communication with Glaſgow by the Clyde, whence naval and military ſtores might be conveyed through the Crinan canal; and afterwards to Fort-William by Loch-Linnhé. There is a regular ferry from Oban to Kerrera, and thence to Auchnacraig in the iſle of Mull. Near Oban there are immenſe rocks of *breccia* or pudding-ſtone, compoſed of very curious rounded pebbles, from the ſize of an egg to that of a man's head; ſome quartzoſe, others granitic, ſchiſtous, calcareous, &c. cemented together by a black lava. In one of theſe rocks is an immenſe cave extending to an unknown length backwards. Oban lies 26 miles WNW. of Inverary.

(2.) OBAN, BAY OF, a ſafe bay in the Sound of Mull, of a ſemicircular form, from 12 to 14 fathoms deep, and large enough to contain above 500 veſſels. It has two openings, one from the S. and the other from the N. and is defended from the fury of the Weſtern winds by the iſlands of Kerrera and Mull. Its anchorage is everywhere good.

OBAS, a river of Tenneſſee, which riſes in the Cumberland mountains, and running NW. falls into the Cumberland.

OBASINE, a town of France, in the dep. of Correze, 5 miles S. of Tulles, and 6 NE. of Brive. Lon. 1. 44 E. Lat. 48. 25. N.

OBBES, or L'OBBES, a village and abbey of France, in the dep. of Jemappes, and late prov. of Auſtrian Hainault. Near it, the French defeated the troops of the allies on the 24th May, 1794, with the loſs of 1500 men. It is 2 miles NW. of Thuin.

OBDACH, a town of Stiria, at the conflux of the Achza and Traun, 35 miles W. of Gratz. Lon 14. 43. E. Lat. 47. 3. N.

OBDORSKOI, a town of Ruſſia, in Tobolſk, near the mouth of the Oby: 680 miles E. of Archangel, and 1040 ENE. of Peterſburg.

* *To* OBDUCE. *v. a.* [*obduco*, Lat.] To draw over as a covering.—No animal exhibits its face in the native colour of its ſkin but man; all others are covered with feathers, hair, or a cortex that is *obduced* over the cutis. *Hale.*

* OBDUCTION. *n. ſ.* [from *obductio*, *obduco*, Lat.] The act of covering, or laying a cover.

* OBDURACY. *n. ſ.* [from *obdurate.*] Inflexible wickedneſs; impenitence; hardneſs of heart. —Thou think'ſt me as far in the devil's book as thou and Falſtaff, for *obduracy* and perſiſtency. *Sh.* —God may, by a mighty grace, hinder the abſolute completion of ſin in final *obduracy. South.*

* OBDURATE. *adj.* [*obduratus*, Latin.] 1. Hard of heart; inflexibly obſtinate in ill; hardened; impenitent.—

Be not *obdurate*, open thy deaf ears. *Shak.*

If, when you make your pray'rs,
God ſhould be ſo *obdurate* as yourſelves,
How would it fare with your departed ſouls?
Shak.

Women are ſoft, mild, pitiful, and flexible;
Thou ſtern, *obdurate*, flinty, rough, remorſeleſs. *Shak.*

To

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To convince the proud what ſigns avail,
Or wonders move the *obdurate* to relent. *Milt.*

Obdurate as you are, oh! hear at leaſt
My dying prayers. *Dryden.*

2. Hardened; firm; ſtubborn: always with ſome degree of evil.—Sometimes the very cuſtom of evil makes the heart *obdurate* againſt whatſoever inſtructions to the contrary. *Hooker.*—

A pleaſing ſorcery could charm
Pain for a while, or anguiſh, and excite
Fallacious hope, or arm th' *obdurate* breaſt
With ſtubborn patience, as with triple ſteel. *Milt.*

—No ſuch thought ever ſtrikes his marble *obdurate* heart, but it preſently flies off and rebounds from it. *South.* 3. Harſh; rugged.—They joined the moſt *obdurate* conſonants without one intervening vowel. *Swift.*

* OBDURATELY. *adv.* [from *obdurate.*] Stubbornly; inflexibly; impenitently.

* OBDURATENESS. *n. ſ.* [from *obdurate.*] Stubbornneſs; inflexibility; impenitence.

* OBDURATION. *n. ſ.* [from *obdurate.*] Hardneſs of heart; ſtubbornneſs.—What occaſion it had given them to think, to their greater *obduration* in evil, that we did conſtrainedly thoſe things, for which conſcience was pretended? *Hooker.*—This barren ſeaſon is always the reward of obſtinate *obduration. Hammond.*

* OBDURED. *adj.* [*obduratus*, Lat.] Hardened; inflexible; impenitent.—

This ſaw his hapleſs foes, but ſtood *obdur'd*,
And to rebellious fight rallied their pow'rs
Inſenſate. *Milton.*

OBED, the ſon of Boaz and Ruth, father of Jeſſe, and grand-father of David.

OBEDACH. See OBDACH.

OBED-EDOM, ſon of Jeduthun, a Levite, and father of 8 ſons. He had a numerous family, ſays the ſcripture, (1 Chr. xvi. 38; and xxvi. 4.) "for God bleſſed him". The reaſon of this bleſſing is recorded in 2 Sam. vi, 10–12. and 1 Chron. xiii, 13, 14. Afterwards Obededom and his ſons were appointed keepers of the doors of the temple. (1 Chron. xv. 18, 21.) In 2 Samuel, vi. 10. he is called the *Gittite*, probably becauſe he was of Gath-Rimmon, a city of the Levites beyond Jordan. Joſh. xxi. 24. 25.

* OBEDIENCE. *n. ſ.* [*obedience*, Fr. *obedientia*, Latin.] Obſequiouſneſs: ſubmiſſion to authority; compliance with command or prohibition.—If you violently proceed againſt him, it would ſhake in pieces the heart of his *obedience. Shak.*—

Thy huſband
Craves no other tribute at thy hands,
But love, fair looks, and true *obedience. Shak.*

—His ſervants ye are, to whom ye obey, whether of ſin unto death, or of *obedience* unto righteouſneſs. *Rom.* iv. 16.—It was both a ſtrange commiſſion, and a ſtrange *obedience* to a commiſſion, for men ſo furiouſly aſſailed, to hold their hands. *Bac.*

In vain thou bidſt me to forbear,
Obedience were rebellion here. *Cowley.*
Nor can this be,
But by fulfilling that which thou didſt want,
Obedience to the law of God, impoſ'd
On penalty of death. *Milton.*

—We muſt beg the grace and aſſiſtance of God's Spirit to enable us to forſake our ſins, and to walk in *obedience* to him. *Duty of man.*—The *obedience* of men is to imitate the *obedience* of angels. *Law.*

* OBEDIENT. *adj.* [*obediens*, Latin.] Submiſſive to authority; compliant with command or prohibition; obſequious.—To this end did I write, that I might know the proof of you, whether ye be *obedient* in all things. 2 *Cor.* ii. 9.—

To this her mother's plot,
She, ſeemingly *obedient*, likewiſe hath
Made promiſe. *Shak.*

—Religion hath a good influence upon the people, to make them *obedient* to government. *Tillotſon.*—

The chief his orders gives; th' *obedient* band,
With due obſervance, wait the chief's command.
Pope.

* OBEDIENTIAL. *adj.* [*obedientiel*, Fr. from *obedient.*] According to the rule of obedience.—Faith is ſuch as God will accept of, when it affords fiducial reliance on the promiſes, and *obedential* ſubmiſſion to the command. *Hammond.*—Faith is then perfect, when it produces in us a fiduciary aſſent to whatever the goſpel has revealed, and an *obedientiał* ſubmiſſion to the commands. *Wake.*

* OBEDIENTLY. *adv* [from *obedient.*] With obedience.—We ſhould behave ourſelves reverently and *obediently* towards the Divine Majeſty. *Tillotſon.*

OBED's RIVER, a river of Tenneſſee, which runs SW. into Cumberland river, 290 miles above its mouth.

* OBEISANCE. *n. ſ.* [*obeiſence*, Fr. This word is formed by corruption from *abaiſance*, an act of reverence.] A bow; a courteſy; an act of reverence made by inclination of the body or knee.—

Bartholomew my page,
She dreſt in all ſuits like a lady;
Then call him Madam, do him all *obeiſance*,
Shak.

—Bathſheba bowed and did *obeiſance* unto the king. 1 *Kings*, i. 16.—

The lords and ladies paid
Their homage, with a low *obeiſance* made. *Dryd.*

(1.) * OBELISK. *n. ſ.* [*obeliſcus*, Lat.] 1. A magnificent high piece of ſolid marble, or other fine ſtone, having uſually four faces, and leſſening upwards by degrees, till it ends in a point like a pyramid. *Harris.*

Between the ſtatues *obeliſks* were plac'd,
And the learn'd walls with hieroglyphicks
grac'd. *Pope.*

2. A mark of cenſure in the margin of a book, in the form of a dagger [†].—He publiſhed the tranſlation of the Septuagint, having compared it with the Hebrew, and noted by aſteriſks what was defective, and by *obeliſks* what redundant. *Grew.*

(2.) *An* OBELISK, in architecture, (§ 1. *def.* 1.) is a truncated, quadrangular, and ſlender pyramid, raiſed as an ornament, and frequently charged either with inſcriptions or hieroglyphics. Obeliſks appear to be of very great antiquity, and to have been firſt raiſed to tranſmit to poſterity precepts of philoſophy, which were cut in hieroglyphical characters: afterwards they were uſed to immortalize the great actions of heroes, and the memory of perſons beloved. The firſt obeliſk mentioned in hiſtory was that of Ramaſes king of Egypt, in the time of the Trojan war, which was

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40 cubits high. Phius, another king of Egypt, raised one of 55 cubits; and Ptolemy Philadelphus, another of 88 cubits, in memory of Arsinoe. Augustus erected one at Rome in the Campus Martius, which served to mark the hours on an horizontal dial, drawn on the pavement. They were called by the Egyptian priests the *fingers of the sun*, because they were made in Egypt also to serve as styles or gnomons to mark the hours on the ground. The Arabs still call them *Pharaoh's needles*; whence the Italians call them *aguglia*, and the French *aiguilles*. The famous obelisks called the *devil's arrows*, now reduced to three, the 4th having been taken down in the 17th century, stand about half a mile from the town of Borough-Bridge to the SW. in three fields, separated by a lane, 200 feet asunder, nearly on high ground sloping every way. Mr Drake urges many arguments for their Roman antiquity, and plainly proves them to be natural, and brought from Plumpton quarries about five miles off, or from Ickly, 16 miles off. The cross in the town, 12 feet high, is of the same kind of stone. The eastermost or highest is 22 feet and an half high, by 4 broad and 4½ in girth; the second 21½ by 5 5½; the third 16½ by 84. Stukeley's measures differ. The flutings are cut in the stone, but not through: the tallest stands alone, and leans to the south. Plot and Stukeley affirm them to be British monuments, originally hewn square. Dr Gale supposed that they were Mercuries, which had lost their heads and inscriptions; but in a MS. note in his Antoninus, he acknowledges that he was misinformed, and that there was no cavity to receive a bust. On the N. side of Penrith, in the churchyard, are two square obelisks, of a single stone each, 11 or 12 feet high, about 12 inches diameter, and 12 by 8 at the sides; the highest about 18 inches diameter, with something like a transverse piece to each, and mortised into a round base. They are 14 feet asunder, and between them is a grave inclosed between 4 semicircular stones of the unequal lengths of 5, 6, 4½, and 2 feet high, having on the outsides rude carving, and the tops notched. This is called the *Giant's grave*, and ascribed to Sir Ewan Cæsarius, who is said to have been as tall as one of the columns, and capable of stretching his arms from one to the other, to have destroyed robbers and wild boars in Englewood forest, and to have had an hermitage hereabouts called *Sir Hugh's parlour*. A little W. of these is a stone called the *Giant's Thumb*, six feet high, 14 inches at the base contracted to 10, which is only a rude cross, which is the circle of 18 inches diameter. M. Pouchard, in the *Memoirs of the Academy of Inscriptions*, gives a very curious account of some celebrated Egyptian obelisks. *Gen. Mag.* for June 1740.

OBENBERG, a town of Germany, in Austria, 6 miles ENE. of Steyregg.

* OBEQUITATION. *n. s.* [from *obequito*, Lat.] The act of riding about.

OBERBERCKHEIM, a town of France, in the dep. of the Upper Rhine; 7½ miles N. of Colmar.

OBERBERG, a late bailiewic of Switzerland, belonging to the abbey of St Gall.

OBERDORF, a town of Suabia, 32 miles S. of Augsburg, and 10 NE. of Kempten.

OBERENHEIM, a town of France, in the dep. of the Lower Rhine, 12 miles SW. of Strasburg.

OBERENDORFF. See OBERNDORF.

OBERGESTLEN, a town of Switzerland, in the Valais; 8 miles E. of Sion.

OBER-HASBERGEN, a town of France, in the dep. of the Lower Rhine, 3 miles NW. of Strasburg, and 12 S. of Haguenau.

OBERHAUS, or ? a fort of Austria near Pas-
OBERHAUSEN, ? sau; which was seized by the troops of the elector of Bavaria, and the Austrian garrison expelled, on the 28th Nov. 1803. This, it was thought would have occasioned a war between the emperor and the elector; but the dread of the power of Bonaparte, who, in that case, would have taken the part of the latter, seems to have led the emperor to overlook the insult.

OBERKIRCH, a town and fort of France, in the dep. of the Lower Rhine, and ci-devant prov. of Alsace; 3 miles, (Mr Cruttwell says 12,) E. of Strasburg, and 44 W. of Stuttgard. On the 26th April 1799, a battle was fought near this town, but on the right bank of the Rhine, wherein the Austrians defeated the French; but the next day they expelled the Austrians, and retook the posts they had abandoned. Lon. 7. 50. E. Lat. 48. 35. N.

(1.) OBERLAND, a province of Prussia, fertile, rich, and well cultivated, formerly called *Hockerland*. It was anciently so populous that it could raise 10,000 troops; but the Pagan Hockerlanders having treated the Christians with great cruelty, the Teutonic knights, in 1273, attacked them, made themselves masters of the country, and laid it waste.

(2.) OBERLAND, a district of Courland, between Seelburg and Lithuania.

OBERNBERG. See OBERNPERG.

OBERNBURG, a town of Germany, in the circle of the Lower Rhine, on the Maine; 6 miles S. of Aschaffenberg, and 16 E. of Darmstadt.

OBERNDORF, a town of Austrian Suabia, in Hohenberg, in the Black Forest, divided into the Upper and Lower towns; seated on the Neckar 8 miles E. of Schramberg.

OBERNHAU, a town of Upper Saxony, in Erzgeburg; 6 miles W. of Lauterstein.

(1.) OBERNKIRCHEN, a town of Germany in Austria, 8 miles W. of Freistatt.

(2.) OBERNKIRCHEN, a town of Germany in Westphalia, and county of Schauenburg; 5 miles E. of Rinteln.

OBERNPERG, a town of Bavaria, on the Inn; with a fort; 12 miles SSW. of Passau. Lon. 13. 36. E. Lat. 48. 15. N.

* OBERRATION. *n. s.* [from *oberro*, Lat.] The act of wandering about.

OBERSCHLEMMA, a town of Upper Saxony, in Erzgeburg; 5 miles SW. of Rinteln.

(1.) OBERSDORF, a town of Bohemia, in Chrudim; 14 miles ENE. of Leutmischl.

(2, 3.) OBERSDORF, 2 towns of Germany: 1. in Suabia, 62 miles S. of Augsburg: 2. in Upper Saxony, in Thuringia, 3 miles N. of Sangerhausen.

OBERSEE, two lakes of Germany: 1. in Bavaria, one mile S. of Konigsee; 2. in Carinthia, 11 miles W. of Welach.

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(1.) OBERSTEIN, a ci devant county of Germany, in the late electorate of Treves, and palatinate of the Rhine; annexed to the French empire in 1797, and included in the dep. of the Rhine and Moselle.

(2.) OBERSTEIN, a town of France, in the department of Rhine and Moselle, late capital of the above county; 32 miles ESE. of Treves, and 33 N. of Deux Ponts. It was taken by the French in October 1794. Lon. 7. 26. E. Lat. 49. 42. N.

OBERSTENFELD, a town of Suabia, in Wurtenburg, 9 miles SE. of Heilbronn.

OBERVALD, a town of Switzerland, in the Valais; 50 miles E. of Sion.

OBERWEIDEN, } two towns of Austria: 1.
OBERWEISS; } four miles ESE. of Weikendorf: 2. three N. of Gemunden.

OBER-WESEL, a town of France, in the dept. of the Rhine and Moselle, and late electorate of Treves; seated on the W. bank of the Rhine, 40 miles ENE. of Treves. Lon. 7. 48. E. Lat. 50. 1. N.

OBERWOLTZ, a town of Germany, in Stiria, 24 miles W. of Judenburg, and 116 SW. of Vienna. Lon. 31. 2. E. Ferro. Lat. 47. 18. N.

* OBESE. *adj.* [*obesus*, Lat.] Fat; loaden with flesh,

* OBESENESS, } *n. f.* [from *obese*.] Morbid fat-
* OBESITY. } ness; incumbrance of flesh. —On these many diseases depend; as on the straitness of the chest, a phthisis; on the largeness of the veins, an atrophy; on their smallness, *obesity*. *Grew's Cosmol.*

* *To* OBEY. *v. a.* [*obeir*, Fr. *obedio*, Lat.] 1. To pay submission to; to comply with, from reverence to authority.—

The will of Heav'n
Be done in this and all things! I *obey*. *Shak.*
I am asham'd that women are so simple
To seek for rule, supremacy, and sway,
When they are bound to serve, love, and *obey*.
Shakesp.

—Let not sin reign in your mortal body, that ye should *obey* it in the lusts thereof *Rom.* vi. 12.—

The ancient Britons yet a sceptr'ed king
obeyed. *Drayton.*
Was she thy God, that her thou didst *obey*
Before his voice? *Milton's Par. Lost.*
Africk and India shall his pow'r *obey*. *Dryd.*

2. It had formerly sometimes *to* before the person obeyed, which *Addison* has mentioned as one of *Milton's* Latinisms; but it is frequent in old writers; when we borrowed the French word we borrowed the syntax, *obeir au roi*.—He commanded the trumpets to sound; *to* which the two brave knights *obeying*, they performed their courses, breaking their staves. *Sidney.*

The flit bark, *obeying to* her mind,
Forth launched quickly. *Spenser.*

—His servants ye are, *to* whom ye *obey*. *Rom.* vi. 16.—

Yet *to* their general's voice they soon *obey'd*.
Milton.

OBIAN, a navigable river of Tennessee, which rises in the high land between the Mississippi, and Tennessee, and running SW. falls into the former.

OBIDOS, a town of Portugal, in Estremadura.

(1.) * OBJECT *n. s.* [*objet*, Fr. *objectum*, Lat.] 1. That about which any power or faculty is employed.—

Pardon
The flat unraised spirit, that hath dar'd,
On this unworthy scaffold, to bring forth
So great an *object*. *Shak. Henry V.*

Yet they no beams unto their *objects* send;
But all the rays are from their *objects* sent. *Davies.*

—The *object* of true faith is either God himself, or the word of God. *Hammond.*—The act of faith is applicated to the *object* according to the nature of it. *Pearson.*—Those things in ourselves are the only proper *objects* of our zeal, which, in others, are the unquestionable subjects of our praises. *Spratt.*—Truth is the *object* of our understanding, as good is of the will. *Dryden's Dufr.*—As you have no mistress to serve, so let your own soul be the *object* of your daily care. *Law.* 2. Something presented to the senses to raise any affection or emotion in the mind.—

Dishonour not your eye
By throwing it on any other *object*. *Shak.*

Why else this double *object* in our sight? *Milt.*

—This passenger felt some degree of concern at the sight of so moving an *object*. *Atterbury.* 3. [In grammar.] Any thing influenced by somewhat else.—The accusative after a verb transitive, or a sentence in room thereof, is called, by grammarians, the *object* of the verb *Clarke.*

(2.) OBJECT, in philosophy, something apprehended or presented to the mind by sensation or imagination. See METAPHYSICS, *Sect.* I, IV.

* *To* OBJECT. *v. a.* [*objecter*, Fr. *objicio*, *objectum*, Lat.] 1. To oppose; to present in opposition.—Flowers growing scattered in divers beds, will shew more so as that they be *objected* to view at once. *Bacon.*—

Pallas to their eyes
The mist *objected*, and condens'd the skies. *Pope.*

2. To propose as a charge criminal; or a reason adverse; with *to* or *against*.—Were it not some kind of blemish to be like unto infidels and Heathens, it would not so usually be *objected*. *Hooker.*—The book requireth due examination, and giveth liberty to *object* any crime against such as are to be ordered. *Whitgifte.*—Men affect a credit to *object* and foretel difficulties. *Bacon.*—The old truth was, *object* ingratitude, and ye *object* all crimes: and is it not as old a truth, is it not a higher truth, *object* rebellion, and ye *object* all crimes. *Holyday.*—This the adversaries of faith have too much reason to *object against* too many of its professors; but *against* the faith itself nothing at all. *Spratt's Sermons.*—It was *objected against* a late painter, that he drew many graceful pictures, but few of them were like. *Dryden.*—Others *object* the poverty of the nation. *Addison's State of the War.*—There was but this single fault that Erasmus, though an enemy, could *object* to him. *Atterbury.*

(1.) * OBJECTGLASS. *n. s.* Glass remotest from the eye.—An *objectglass* of a telescope I once mended, by grinding it on pitch with putty. *Newton's Opticks.*

(2.) OBJECT-GLASS OF A TELESCOPE or MICROSCOPE. See MICROSCOPE and OPTICS.

* OBJECTION *n. s.* [*objection*, Fr. *objectio*, Lat.] 1. The act of presenting any thing in opposition.

2. Criminal

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2. Criminal charge.—

Speak on, Sir;
I dare your worſt *objections*. *Shak. Henry* VIII.

3. Adverſe argument.—There is ever between all eſtates a ſecret war. I know well this ſpeech is the *objection*, and not the deciſion. *Bacon's War with Spain.*—Whoſoever makes ſuch *objections* againſt an hypotheſis, hath a right to be heard. *Burnet's Theory.* 4. Fault found.—I have ſhewn your verſes to ſome, who have made that *objection* to them. *Walſh's Letter.*

(1.) * OBJECTIVE *adj.* [*objectif*, Fr. *objectus*, Lat.] 1. Belonging to the object; contained in the object.—Certainty, according to the ſchools, is diſtinguiſhed into *objective* and ſubjective. *Objective* certainty is when the propoſition is certainly true in itſelf; and ſubjective, when we are certain of the truth of it. *Watt's Logic.* 2. Made an object; propoſed as an object; reſiding in objects.—If this one ſmall piece of nature ſtill affords new matter for our diſcovery, when ſhould we be able to ſearch out the vaſt treaſuries of *objective* knowledge that lies within the compaſs of the univerſe? *Hale's Origin of Mankind.*

(2.) OBJECTIVE is uſed in the ſchools, in ſpeaking of a think which exiſts no otherwiſe than as an object known. The exiſtence of ſuch a thing is ſaid to be objective.

* OBJECTIVELY. *adv.* [from *objective*.] 1. In manner of an object.—This may fitly be called a determinate idea, when, ſuch as it is at any time *objectively* in the mind, it is annexed, and without variation determined to an articulate ſound, which is to be ſteadily the ſign of that ſame object of the mind. *Locke.* 2. In the ſtate of an object.—The baſiliſk ſhould be deſtroyed, in regard he firſt receiveth the rays of his antipathy and venomous emiſſion, which *objectively* move his ſenſe. *Brown.*

* OBJECTIVENESS. *n. ſ.* [from *objective*.] The ſtate of being an object.—Is there ſuch a motion or *objectiveneſs* of external bodies, which produceth light? The faculty of light is fitted to receive that impreſſion or *objectiveneſs*, and that *objectiveneſs* fitted to that faculty. *Hale's Orig. of M.*

* OBJECTOR. *n. ſ.* [from *object*.] One who offers objections; one who raiſes difficulties.—

But theſe *objectors* muſt the cauſe upbraid,
That has not mortal man immortal made.
Blackmore.

—Let the *objectors* conſider, that theſe irregularities muſt have come from the laws of mechaniſm. *Bentley.*

OBILA, an inland territory of Africa.

OBION. See OBIAN.

(1.) * OBIT. [a corruption of *abiit*, or *obivit*.] Funeral obſequies. *Ainſworth.*

(2.) OBIT (§ 1.) is not "a corruption of *obiit*," but a regular derivative from *obitus*, death. It ſignifies a funeral ſolemnity, or office for the dead, moſt commonly performed when the corpſe lies in the church uninterred: Alſo the anniverſary office, (2 Crd. 51. Dyer 313). The anniverſary of any perſon's death was alſo called the *obit*; and to obſerve ſuch day with prayers and alms, or other commemoration, was the keeping of the obit. In religious houſes they had a regiſter, wherein they entered the obits or *obitual* days of their founders and benefactors; which was thence termed OBITUARY. The tenure of obit or chantry lands is taken away and extinct by 1 Edward VI. c. 14. and 15. Car. II. c. 9.

OBITEREA, one of the SOCIETY ISLANDS, in the S. Pacific Ocean, according to Mr Cruttwell; who places it in Lon. 209. 10. E. But Dr Morſe places it 100 leagues S. of them, in Lon. 130. 50. W. of Greenwich. Both agree that it lies in Lat. 21. 40.

OBITUAL, *adj.* [from *obitus*, Lat.] Of or belonging to funeral rites. See BURIAL, § 2; and FUNERAL, § 3.—15.

OBITUARY. *n. ſ.* [from *obitus*, Lat.] A regiſter of the dead. *Aſh.* See BILL, § 22; and MORTALITY, § 2—7.

* *To* OBJURGATE. *v. a.* [*objurgo*, Latin.] To chide; to reprove.

* OBJURGATION. *n. ſ.* [*objurgatio*, Latin.] Reproof; reprehenſion.—If there be no true liberty, but all things come to paſs by inevitable neceſſity, then what are all interrogations and *objurgations*, and reprehenſions, and expoſtulations? *Bramhall.*

* OBJURGATORY. *adj.* [*objurgatorius*, Lat.] Reprehenſory; culpatory; chiding.

(1.) * OBLATE. *adj.* [*oblatus*, Lat.] Flatted at the poles. Uſed of a ſpheroid.—By gravitation bodies on this globe will preſs towards its centre, though not exactly thither, by reaſon of the *oblate* ſpheroidical figure of the earth, ariſing from its diurnal rotation about its axis. *Cheyne's Phil. Prin.*

(1.) *An* OBLATE SPHEROID has its axis ſhorter than its middle diameter, being formed by the rotation of an ellipſe about the ſhorter axis.

OBLATI, [Lat.] in church hiſtory, ſecular perſons who devoted themſelves and their eſtates to ſome monaſtery, into which they were admitted as a kind of lay brothers. The form of their admiſſion was putting the bell-ropes of the church round their necks as a mark of ſervitude. They wore a religious habit, different from that of the monks.

(1.) * OBLATION. *n. ſ.* [*oblation*, Fr. *oblatus*, Lat.] An offering; a ſacrifice; any thing offered as an act of worſhip or reverence.—She looked upon the picture before her, and ſtraight ſighed, and ſtraight tears followed, as if the idol of duty ought to be honoured with ſuch *oblation*. *Sidney.*—Many conceive in the *oblation* of Jephtha's daughter, not a natural but a civil kind of death, and a ſeparation from the world. *Brown.*—The will gives worth to the *oblation*, as to God's acceptance. *South.*

The kind *oblation* of a falling tear. *Dryden.*
All make *oblations* at this ſhrine. *Swift.*

(2.) OBLATION. See OFFERING, & SACRIFICE.

* OBLECTATION. *n. ſ.* [*oblectatio*, Lat.] Delight; pleaſure.

OBLEY a town of Lithuania, in Wilna.

* *To* OBLIGATE. *v. a.* [*obligo*, Latin.] To bind by contract or duty.

(1.) * OBLIGATION. *n. ſ.* [*obligatio*, from *obligo*, Latin; *obligation*, French.] 1. The binding power of any oath, vow, duty, contract.

Your father loſt a father;
That father bis; and the ſurvivor bound,
In filial *obligation*, for ſome term,
To do obſequious ſorrow. *Shak.*

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—There was no means for him as a Chriſtian, to ſatisfy all *obligations*, both to God and man, but to offer himſelf for a mediator of an accord and peace. *Bacon.*—Nothing can be more reaſonable than that ſuch creatures ſhould be under the *obligation* of accepting ſuch evidence as in itſelf is ſufficient for their conviction. *Wilkins.*—The better to ſatisfy this *obligation*, you have early cultivated the genius you have to arms. *Dryden.*—

No ties can bind that from conſtraint ariſe;
Where either's forc'd, all *obligation* dies.
Granville.

4. An act which binds any man to ſome performance.—The heir of an obliged perſon is not bound to make reſtitution, if the *obligation* paſſed only by a perſonal act. *Taylor.* 3. Favour by which one is bound to gratitude.—Where is the *obligation* of any man's making me a preſent of what he cares not for himſelf? *L'Eſtrange.*—So quick a ſenſe did the Iſraelites entertain of the merits of Gideon, and the *obligation* he had laid upon them, that they tender him the regal and hereditary government of that people. *South.*

(2.) OBLIGATION is of three kinds, viz. natural, civil, and mixed. Natural obligation is entirely founded on natural equity; civil obligation on civil authority alone, without any foundation in natural equity; and mixed obligations are thoſe which, being founded on natural equity, are farther enforced by civil authority.

(3.) OBLIGATION, in law, ſignifies a bond, wherein is contained a penalty, with a condition annexed for the payment of money, &c. The difference between it and a bill is, that the latter is generally without a penalty or condition, though it may be made obligatory; and obligations are ſometimes, by matter of record, as ſtatutes and recognizances. See BOND.

(4.) OBLIGATION, MORAL. See MORAL PHILOSOPHY.

* OBLIGATORY. *adj.* [*obligatoire*, Fr. from *obligate*.] Impoſing an obligation; binding; coercive: with *to* or *on*.—And concerning the lawfulneſs, not only permiſſively, but whether it be not *obligatory to* Chriſtian princes and ſtates. *Bacon.*—As long as the law is *obligatory*, ſo long our obedience is due. *Taylor's Rule.*—A people long uſed to hardſhips look upon themſelves as creatures at mercy, and that all impoſitions laid on them by a ſtronger hand are legal and *obligatory*. *Swift.*—If this patent is *obligatory on* them, it is contrary to acts of parliament, and therefore void. *Swift.*

* *To* OBLIGE. *v. a.* [*obliger*, Fr. *obligo*, Lat.] 1. To bind; to impoſe obligation; to compel to ſomething.—All theſe have moved me, and ſome of them *obliged* me to commend theſe my labours to your grace's patronage. *White.*—The church hath been thought fit to be called Catholic, in reference to the univerſal obedience which it preſcribeth; both in regard of the perſons, *obliging* men of all conditions, and in relation to the precepts. *Pearſon.*—Religion *obliges* men to the practice of thoſe virtues which conduce to the preſervation of our health. *Tillotſon.*—The law muſt *oblige* in all precepts, or in none. If it *oblige* in all, all are to be obeyed; if it *oblige* in none, it has no longer the authority of a law. *Rogers.* 2. To indebt; to lay obligations of gratitude.—

He that depends upon another muſt
Oblige his honour with a boundleſs truſt. *Waller.*
Since love *obliges* not, I from this hour
Aſſume the right of man's deſpotic power. *Dryd.*
Man by his own ſtrength to heaven would
ſoar,
And would not be *obliged* to God for more.
Dryden.

When int'reſt calls off all her ſneaking train,
When all th' *oblig'd* deſert, and all the vain,
She waits or to the ſcaffold or the cell. *Pope.*
—To thoſe hills we are *obliged* for all our metals. *Bentley.* 3. To pleaſe; to gratify.—A great man gets more by *obliging* his inferior, than by diſdaining him. *South.*—Some natures are ſo ſour and ungrateful, that they are never to be *obliged*. *L'Eſtrange.*

Happy the people who preſerve their honour
By the ſame duties that *oblige* their prince. *Cato.*

* OBLIGEE. *n. ſ.* [from *oblige*.] The perſon bound by a legal or written contract.

* OBLIGEMENT. *n. ſ.* [*obligement*, French.] Obligation.—I will not reſiſt, whatever it is, either of divine or human *obligement*, that you lay upon me. *Milton.*

Let this fair princeſs but one minute ſtay,
A look from her will your *obligements* pay.
Dryden.

* OBLIGER. *n ſ.* He who binds by contract.

* OBLIGING. *part. adj.* [*obligeant*, Fr. from *oblige*.] Civil; complaiſant; reſpectful; engaging.—Nothing could be more *obliging* and reſpectful than the lion's letter was, in appearance; but there was death in the true intent. *L'Eſtrange.*—Monſeigneur Strozzi has many curioſities, and is very *obliging* to a ſtranger who deſires the ſight of them. *Addiſon.*—

Obliging creatures! make me ſee
All that diſgrac'd my betters met in me. *Pope.*
So *obliging* that he never *oblig'd*. *Pope.*

* OBLIGINGLY. *adv.* [from *obliging*.] Civilly; complaiſantly.—Eugenius informs me very *obligingly*, that he never thought he ſhould have diſliked any paſſage in my paper. *Addiſon.*—

I ſee her taſte each nauſeous draught,
And ſo *obligingly* am caught;
I bleſs the hand from whence they came.
Nor dare diſtort my face for ſhame. *Swift.*

* OBLIGINGNESS. *n. ſ.* [from *obliging*.] 1. Obligation; force.—They look unto them, not to weigh the *obligingneſs*, but to quarrel the difficulty of the injunctions. *Decay of Piety.* 2. Civility; complaiſance.

* OBLIQUATION. *n. ſ.* [*obliquatio*, from *obliquo*, Lat.] Declination from ſtraightneſs or perpendicularity; obliquity.—The change, made by the *obliquation* of the eyes, is leſs in colours of the denſeſt than in thin ſubſtances. *Newton.*

(1.) * OBLIQUE. *adj.* [*oblique*, French; *obliquus*, Latin.] 1. Not direct; not perpendicular; not parallel.—

One by his view
Mought deem him born with ill diſpoſed ſkies,
When *oblique* Saturn ſat in the houſe of the
agonies. *Spenſer.*

—If

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—If sound be stopped and repercussed, it cometh about on the other side in an *oblique* line. *Bacon.*—

May they not pity us, condemn'd to bear
The various heav'n of an *obliquer* sphere? *Prior.*

Bavaria's stars must be accus'd, which shone,
That fatal day the mighty work was done,
With rays *oblique* upon the Gallic son. *Prior.*

—It has a direction *oblique* to that of the former motion. *Cheyne.*—Critics form a general character from the observation of particular errors, taken in their own *oblique* or imperfect views. *Broome.* 2. Not direct; indirect; by a side glance.—

Has he given the lie
In circle, or *oblique*, or semicircle,
Or direct parallel? *Shak.*

3. [In grammar.] Any case in nouns except the nominative.

(2.) OBLIQUE, in geometry (§ 1. *def.* 1.), something aslant, or that deviates from the perpendicular. Thus,

(3.) *An* OBLIQUE ANGLE is either an acute or obtuse one, *i. e.* any angle except a right one.

(4.) OBLIQUE ASCENSION is that point of the EQUINOCTIAL which rises with the centre of the sun, or a star, or any other point of the heavens, in an oblique sphere.

(5.) OBLIQUE CASES. See § 1. *def.* 3; and LANGUAGE, *Sect.* V.

(6.) OBLIQUE CIRCLE, in the stereographic projection, is any circle that is oblique to the plane of projection.

(7.) OBLIQUE DESCENSION is that point of the equinoctial which sets with the centre of the sun, or star, or other point of the heavens, in an oblique sphere.

(8.) OBLIQUE FORCE, or PERCUSSION, or POWER, or STROKE, is that made in a direction oblique to a body or plane. It is demonstrated, that the effect of such oblique force, &c. upon the body, is, to an equal perpendicular one, as the sine of the angle of incidence is to radius.

(9.) OBLIQUE LINE, that which, falling on another line, makes oblique angles with it, viz. one acute, and the other obtuse.

(10.) OBLIQUE PLANES, in dialling, are those which decline from the zenith, or incline towards the horizon. See DIAL.

(11.) OBLIQUE SAILING, in navigation, is when a ship sails upon some rhumb between the four cardinal points, making an oblique angle with the meridian; in which case she continually changes both latitude and longitude. See NAVIGATION, *Part* II. *Sect.* V.

(12.) OBLIQUE STROKE, &c. See § 8.

* OBLIQUELY. *adv.* [from *oblique*] 1. Not directly; not perpendicularly.—Of meridian altitude, it hath but 23 degrees, so that it plays but *obliquely* upon us. *Brown.*—

Declining from the noon of day,
The sun *obliquely* shoots his burning ray. *Pope.*

2. Not in the immediate or direct meaning.—They haply might admit the truths *obliquely* levelled, which bashfulness persuaded not to enquire for. *Fell.*—His discourse tends *obliquely* to the detracting from others, or the extolling of himself. *Addison.*

* OBLIQUENESS. } *n. s.* [*obliquité*, Fr. from
* OBLIQUITY. } *oblique.*] 1. Deviation from physical rectitude; deviation from parallelism or perpendicularity.—

Mov'd contrary with thwart *obliquities*. *Milt.*

2. Deviation from moral rectitude.—There is in rectitude, beauty; as contrariwise in *obliquity*, deformity. *Hooker.*—Count Rhodophill, cut out for government and high affairs, and balancing all matters in the scale of his high understanding, hath rectified all *obliquities*. *Howel.*—To disobey or oppose his will in any thing, imports a moral *obliquity*. *South.*

OBLIQUUS, in anatomy, a name given to several muscles, particularly in the head, eyes, and abdomen. See ANATOMY, § 206, 1, 2, &c.

* *To* OBLITERATE. *v. a.* [*oblitero*, *ob* and *litera*, Latin.] 1. To efface any thing written. 2. To wear out; to destroy; to efface.—Wars and desolations *obliterate* many ancient monuments. *Hale's Origin of Mankind.*—Let men contrive how they may *obliterate* that reproach, and disentangle their mortgaged souls. *Decay of Piety.*—These simple ideas, the understanding can no more refuse to have, or alter, or blot them out, than a mirrour can refuse, alter, or *obliterate* the images which the objects set before it produce. *Locke.*

* OBLITERATION. *n. s.* [*oblitteratio*, Latin.] Effacement; extinction.—Considering the casualties of war, transmigrations, especially that of the general flood, there might probably be an *obliteration* of all those monuments of antiquity that ages precedent at some time have yielded. *Hale's Origin.*

* OBLIVION. *n. s.* [*oblivio*, Latin.] 1. Forgetfulness; cessation of remembrance.—

Water drops have worn the stones of Troy,
And blind *oblivion* swallow'd cities up. *Shak.*

—Thou shouldst have heard many things of worthy memory, which now shall die in *oblivion*. *Shak.*—Knowledge is made by *oblivion*, and to purchase a clear and warrantable body of truth, we must forget and part with much we know. *Brown.*—Can they imagine, that God has therefore forgot their sins, because they are not willing to remember them? or will they measure his pardon by their own *oblivion*. *South.*—

Among our crimes *oblivion* may be set,
But 'tis our king's perfection to forget. *Dryden.*

2. Amnesty; general pardon of crimes in a state.—By the act of *oblivion*, all offences against the crown, and all particular trespasses between subject and subject, were pardoned, remitted, and utterly extinguished. *Davies.*

* OBLIVIOUS. *adj.* [*oblivialis*, Latin.] Causing forgetfulness.—

Raze out the written troubles of the brain,
And with some sweet *oblivious* antidote,
Cleanse the stuff'd bosom. *Shak. Mach.*

Well aveng'd, they quit the cares
Of mortal life, and drink th' *oblivious* lake.
Philips.

Behold the wonders of th' *oblivious* lake. *Pope.*

(1.) * OBLONG. *adj.* [*oblong*, Fr. *oblongus*, Latin.] Longer than broad; the same with a rectangle parallelogram, whose sides are unequal. *Harris.*—The best figure of a garden I esteem an *oblong* upon a descent. *Temple's Misc.*—Every particle, supposing them globular or not very *oblong*, would be

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be above nine million times their own length from any other particle. *Bentley.*

(2.) *An* OBLONG SPHEROID is that which is formed by an ellipſe revolved about its longer or tranſverſe axis, in contradiſtinction from the OBLATE SPHEROID, or that which is flatted at its poles.

* OBLONGLY. *adv.* [from *oblong.*] In an oblong form.—The ſurface of the temperate climates is larger than it would have been, had the globe of our earth, or of the planets, been either ſpherical or *oblongly* ſpheroidical. *Cheyne.*

* OBLONGNESS. *n. ſ.* [from *oblong.*] The ſtate of being oblong.

(1.) * OBLOQUY. *n. ſ.* [*obloquor*, Lat.] 1. Cenſorious ſpeech; blame; ſlander; reproach.—Moderation hath freed us from being deſervedly ſubject unto that bitter kind of *obloquy*, whereby we might be upbraided. *Hooker.*—

Here new aſperſions, with new *obloquies*,
Are laid on old deſerts. *Daniel's Civil War.*

Canſt thou with impious *obloquy* condemn
The juſt decree of God? *Milton.*

—Shall names that made your city the glory of the earth, be mentioned with *obloquy* and detraction? *Addiſon.*—Every age might perhaps produce one or two true genius, if they were not ſunk under the cenſure and *obloquy* of plodding, ſervile, imitating pedants. *Swift.* 2. Cauſe of reproach; diſgrace. Not proper.—

My chaſtity's the jewel of our houſe,
Bequeathed down from many anceſtors;
Which were the greateſt *obloquy* i' th' world
In me to loſe. *Shak. All's well that ends well.*

(2.) OBLOQUY. See CALUMNY, § 2.

* OBMUTESCENCE. *n. ſ.* [from *obmuteſco*, Lat.] Loſs of ſpeech.—A vehement fear often produceth *obmuteſcence*. *Brown.*

* OBNOXIOUS. *adj.* [*obnoxius*, Latin.] 1. Subject.—I propound a character of juſtice in a middle form, between the ſpeculative diſcourſes of philoſophers, and the writings of lawyers, which are tied and *obnoxious* to their particular laws. *Bacon's Holy War.* 2. Liable to puniſhment.—

All are *obnoxious*. *Waller.*

—We know ourſelves *obnoxious* to God's ſevere juſtice. *Calamy.*—

The Mantuan tow'rs,
Obnoxious by Cremona's neighb'ring crime.
Dryden.

3. Reprehenſible; not of ſound reputation.—Conceiving it moſt reaſonable not to ſuffer his underſtanding to be prepoſſeſt by the contrived and intereſted ſchemes of modern, and withal *obnoxious* authors. *Fell.* 4 Liable; expoſed.—Long hoſtility had made their friendſhip weak in itſelf, and more *obnoxious* to jealouſies and diſtruſts. *Hayward.*—

Who aſpires, muſt down as low
As high he ſoar'd; *obnoxious* firſt or laſt
To baſeſt things. *Milton's Par. Loſt.*

Beaſts lie down,
To dews *obnoxious* on the graſſy floor. *Dryden.*

—They leave the government a trunk naked, defenceleſs, and *obnoxious* to every ſtorm. *Davenant.*

* OBNOXIOUSLY. *adv.* [from *obnoxious.*] In a ſtate of ſubjection; in the ſtate of one liable to puniſhment.

* OBNOXIOUSNESS. *n. ſ.* [from *obnoxious.*] Subjection; liableneſs to puniſhment.

* *To* OBNUBILATE. *v. a.* [*obnubilo*, Latin.] To cloud; to obſcure.

OBODA. See OBOTH.

OBODOS, a deity worſhipped at OBOTH.

OBODOWKA, a town and fort of Poland, in Braclaw; 28 miles S. of Braclaw.

OBOIAN, a town of Ruſſia, in Kurſk.

OBOLARIA, in botany; a genus of the angioſpermia order, belonging to the didynamia claſs of plants; and in the natural method ranking under the 40th order, *Perſonatæ*. The calyx is bifid; the corolla campanulated and quadrifid; the capſule unilocular, bivalved, and polyſpermous; the ſtamina riſing from the diviſions of the corolla.

* OBOLE. *n. ſ.* [*obolus*, Latin.] in pharmacy, twelve grains. *Ainſ.*

OBOLLAH, a populous and ſtrong town of Perſia, in Irak Agemi, on a branch of the Tigris, near Baſſora, in a very agreeable country. Lon. 45. 15. E. Lat. 30. 15. N.

(1.) OBOLUS, an ancient ſilver money of Athens, the ſixth part of a drachma; worth ſomewhat more than a penny farthing ſterling. The word is derived from the Greek ὀβολὸς or ὀβελὸς, a *ſpit*, or *broach*; either becauſe it bore ſuch an impreſſion, or becauſe, according to Euſtathius, it was in form thereof. But thoſe now in the cabinets of antiquaries are round. See NUMISMATOGRAPHY, *Sect.* IV.

(2.) OBOLUS, in medicine, is uſed for a weight of ten grains, or half a ſcruple.

OBONA, a town of Spain, in Aſturia.

OBORKOW, a town of Poland, in Belcz.

OBORNOI, a cape of Ruſſian Lapland, on the E. coaſt, in the prov. of Archangel, 200 miles SE. of Kola.

OBOTH, an encampment of the Hebrews in the wilderneſs. From Punon they went to Oboth, and from Oboth to Je-abarim (Numb. xxi. 10. xxxiii. 43). Ptolemy ſpeaks of a city called OBODA, or *Eboda*, in Arabia Petræa, which is the ſame as Oboth. Pliny and the geographer Stephanus mention it alſo. Stephanus makes it belong to the Nabathæans, and Pliny to the Helmodeans, a people of Arabia. It was at Oboth that they worſhipped the god OBODOS, whom Tertullian joins with Duſares, another god or king of this country.

OBOTRITES, an ancient people of Germany, who inhabited the country now called *Mecklenburg*. See MECKLENBURG, N° 2.

OBRA, a town of Poland, in Poſnania.

OBRECHT, Ulric, a learned German, born of a noble family at Straſburg in 1646, where he filled the chairs of civil law and hiſtory with great diſtinction. He was a Proteſtant, but when Lewis XIV. made himſelf maſter of Straſburg, and went there with his court, he changed, and abjured in 1684. In 1685, the king nominated him to preſide in his name in the ſenate of Straſburg, with the title of prætor royal, in imitation of the ancient Romans; from which time he applied himſelf entirely to public affairs. He was the editor, tranſlator, and writer, of ſeveral learned works, and died in 1701.

OBRECKHEIM, a town of Germany, in the Palatinate

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Palatinate of the Rhine; 19 miles E. of Heidelberg, and 10 N. of Wimpfen.

* OBREPTION. *n. f.* [*obreptio*, Latin.] The act of creeping on with secrecy or by surprise.

OBREPTITIOUS, *adj.* an appellation given to letters patent, or other instruments, obtained of a superior by surprise, or by concealing from him the truth.

OBRIEN'S BRIDGE, a village of Ireland, in Clare county, Munster.

OBRINGA, the ancient name of a river of Germany, which runs into the Rhine, about Rimmagen; now called *Abr.*

OBRIS, the ancient name of a river in Gallia Narbonenfis, now called the ORBE.

OBRITZ, a town of Auftria on the Taya.

* *To* OBROGATE. *v. a.* [*obrogo*, Latin.] To proclaim a contrary law for the diffolution of the former. *Dict.*

* OBSCENE. *adj.* [*obfcene*, Fr. *obfcænus*, Lat. 1. Immodeft; not agreeable to chaftity of mind; caufing lewd ideas.—

Chemos the *obfcene* dread of Moab's fons. *Milton.*

—Words that were once chafte, by frequent ufe, grow *obfcene* and uncleanly. *Watts.* 2. Offenfive; difgufting.—

A girdle foul with greafe binds his *obfcene* attire. *Dryden.*

Home as they went, the fad difcourfe renew'd,
Of the relentlefs dame to death purfu'd,
And of the fight *obfcene* fo lately view'd. *Dryden.*

3. Inaufpicious; ill-omened.—

Care fhuns thy walks, as at the chearful light
The groaning ghofts and birds *obfcene* take flight. *Dryden.*

—It is the fun's fate like your's, to be difpleafing to owls and *obfcene* animals, who cannot bear his luftre. *Pope.*

* OBSCENELY. *adv.* [from *obfcene.*] In an impure and unchafte manner.

* OBSCENENESS. } *n. f. obfcenité*, Fr. from
* OBSCENITY. } *obfcene.*] Impurity of thought or language; unchaftity; lewdnefs.—Mr Cowley aflerts plainly, that *obfcenity* has no place in wit. *Dryden.*—Thofe fables were tempered with the Italian feverity, and free from any note of infamy or *obfceneneffs. Dryden.*—

In Tiber ducking thrice by break of day,
To wafh th' *obfcenities* of night away. *Dryden.*

No pardon vile *obfcenity* fhould find,
Tho' wit and art confpire to move your mind. *Pope.*

* OBSCURATION. *n. f.* [*obfcuratio*, Latin.] 1. The act of darkening. 2. A ftate of being darkened.—As to the fun and moon, their *obfcuration* or change of colour happens commonly before the eruption of a fiery mountain. *Burnet.*

* OBSCURE. *adj.* [*obfcure*, Fr. *obfcurus*, Lat.] 1. Dark; unenlightened: gloomy, hindering fight.—Whofo curfeth his father or mother, his lamp fhall be put out in *obfcure* darknefs. *Prov.* xx. 20.

Who fhall tempt with wand'ring feet
The dark unbottom'd infinite abyfs,
And thro' the palpable *obfcure* † find out
His uncouth way? *Milton.*

2. Living in the dark.—The *obfcure* bird clamour'd the live-long night. *Shak.* 3. Not eafily intelligible; abftrufe; difficult.—I explain fome of the moft *obfcure* paffages, and thofe which are moft neceffary to be underftood. *Dryden.* 4. Not noted; not obfervable.—He fays, that he is an *obfcure* perfon; one, I fuppofe, that is in the dark. *Atterbury.*

* *To* OBSCURE. *v. a.* [*obfcuro*, Lat.] 1. To darken; to make dark.—They are all couched in a pit hard by Herne's oak, with *obfcured* lights. *Shak.*

The winds whiftle and the furges roll,
Mountains on mountains, and *obfcure* the pole. *Pope.*

2. To make lefs vifible.—

What, muft I hold a candle to my fhame?
Why, 'tis an office of difcovery, love,
And I fhould be *obfcur'd.* *Shak.*

—Thinking by this retirement to *obfcure* himfelf from God, he infringed the omnifciency and eflential ubiquity of his Maker. *Brown.* 3. To make lefs intelligible.—It hath been ufed in dangerous times to *obfcure* writing, and make it to be read by others not acquainted with the intrigue. *Holder.*—There is fcarce any duty which has been fo *obfcured* by the writings of learned men as this. *Wake.* 4. To make lefs glorious, beautiful, or illuftrious.—

Think'ft thou, vain fpirit, thy glories are the fame?
And feeft not fin *obfcures* thy godlike frame? *Dryden.*

5. To conceal; to make unknown.—

O might I here
In folitude live favage, in fome glade
Obfcur'd. *Milton.*

* OBSCURELY. *adv.* [from *obfcure.*] 1. Not brightly; not luminoufly; darkly. 2. Out of fight; privately; without notice; not confpicuoufly.—

Such was the rife of this prodigious fire,
Which, in mean buildings firft *obfcurely* bred,
From thence did foon to open ftreets afpire. *Dryden.*

There live retir'd,
Content thyfelf to be *obfcurely* good. *Addifon.*

3. Not clearly; not plainly; darkly to the mind.—

The woman's feed at firft *obfcurely* told,
Now ampler known, thy Saviour and thy Lord. *Milton.*

* OBSCURENESS. } *n. f.* [*obfcuritas*, Lat. *ob-*
* OBSCURITY. } *fcurité* French.] 1. Darknefs; want of light.—

Lo! a day of darknefs and *obfcurity*, tribulation and anguifh upon the earth. *Eſther* xi. 8.—

I could lend them *obfcureneſs.* *Donne.*

2. Unnoticed ftate; privacy.—

You are not for *obfcurity* defign'd,
But, like the fun, muft cheer all human kind. *Dryden.*

3. Darknefs of meaning.—Not to mention that *obfcureneſs* that attends prophetic raptures, there are divers things knowable by the bare light of nature,

† *In this paſſage* obſcure *is evidently uſed by* MILTON *as a* ſubſtantive *noun, and therefore ſhould have formed a diſtinct article.*

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nature, which will yet appear obscure. *Boyle.*—That this part of sacred scripture had difficulties in it, many causes of *obscurity* did readily occur to me. *Locke.*—What lies beyond our positive idea towards infinity, lies in *obscurity*, and has the undeterminate confusion of a negative idea, it being too large for a finite capacity. *Locke.*

(1.) * OBSECRATION. *n. f.* [*obsecratio*, from *obsecro*, Lat.] Intreaty; supplication.—That these were comprehended under the sacra, is manifest from the old form of *obsecration*. *Stillingfleet.*

(2.) OBSECRATION, in rhetoric, a figure whereby the orator implores the assistance of God or man.

OBSEQUENS, Julius, a Latin writer, supposed to have lived before Honorius's reign. He made a collection of the prodigies which Livy related in his history. There are several editions of those remains. Lycosthenes endeavoured to supply what was wanting in the original.

(1.) * OBSEQUIES. *n. f.* [*obsequies*, French. I know not whether this word be not anciently mistaken for *exequies*, *exequiæ*, Latin: this word however, is apparently derived from *obsequium*.] 1. Funeral rites; funeral solemnities.—There was Dorilaus, valiantly requiring his friend's help in a great battle, deprived of life, his *obsequies* being not more solemnized by the tears of his partakers, than the blood of his enemies. *Sidney.*—

Fair Juliet, that with angels dost remain,
Accept this latest favour at my hand;
That living honour'd thee, and being dead,
With fun'ral *obsequies* adorns thy tomb. *Shak.*

I spare the widows tears, their woeful cries,
And howling at their husbands *obsequies*. *Dryd.*

I will, myself,
Be the chief mourner at his *obsequies*. *Dryden.*

Alas! poor Poll, my Indian talker, dies,
Go birds and celebrate his *obsequies*. *Creech.*

2. It is found in the singular, perhaps more properly.—

Or tune a song of victory to me,
Or to thyself, sing thine own *obsequy*. *Crashaw.*

Him I'll solemnly attend,
With silent *obsequy* and funeral train. *Milton.*

(2.) OBSEQUIES. See BURIAL, § 2; and FUNERAL, § 3—15.

* OBSEQUIOUS. *adj.* [from *obsequium*, Latin.] 1. Obedient; compliant; not resisting.—Adore not so the rising son, that you forget the father, who raised you to this height; nor be you so *obsequious* to the father, that you give just cause to the son to suspect that you neglect him. *Bacon.*—

At his command th' up-rooted hills retir'd
Each to his place; they heard his voice, and went
Obsequious. *Milton.*

I follow'd her; she what was honour knew,
And, with *obsequious* majesty, approv'd
My pleaded reason. *Milton.*

See how th' *obsequious* wind and liquid air
The Theban swan does upward bear. *Cowley.*—A genial cherishing heat acts so upon the fit and *obsequious* matter, as to organize and fashion it according to the exigencies of its own nature. *Boyle.*—

His servants weeping,
Obsequious to his orders, bear him hither. *Addis.*—The vote of an assembly, which we cannot reconcile to public good, has been conceived in a private brain, afterwards supported by an *obsequious* party. *Swift.* 2. In *Shakespeare* it seems to signify funeral; such as the rites of funerals require.

The survivor bound,
In filial obligation, for some term,
To do *obsequious* sorrow. *Shak.*

* OBSEQUIOUSLY. *adv.* [from *obsequious*.] 1. Obediently; with compliance.—

They rise, and with respectful awe,
At the word giv'n, *obsequiously* withdraw. *Dryd.*

—We cannot reasonably expect, that any one should readily and *obsequiously* quit his own opinion, and embrace ours with a blind resignation. *Locke.* 2. In *Shakespeare* it signifies, with funeral rites; with reverence for the dead.—

I a while *obsequiously* lament
Th' untimely fall of virtuous Lancaster. *Shak.*

* OBSEQUIOUSNESS. *n. f.* [from *obsequious*.] Obedience; compliance.—They apply themselves both to his interest and humour, with all the arts of flattery and *obsequiousness*. *South.*

* OBSERVABLE. *adj.* [from *observo*, Latin.] Remarkable; eminent; such as may deserve notice.—They do bury their dead with *observable* ceremonies. *Abbot.*—These properties affixed unto bodies from considerations deduced from east, west, or those *observable* points of the sphere, will not be justified from such foundations. *Brown.*—I took a just account of every *observable* circumstance of the earth, stone, metal, or other matter. *Woodward.*—The great and more *observable* occasions of exercising our courage, occur but seldom. *Rodgers.*

* OBSERVABLY. *adv.* [from *observable*.] In a manner worthy of note.—It is prodigious to have thunder in a clear sky, as is *observably* recorded in some histories. *Brown.*

* OBSERVANCE. *n. s.* [*observance*, French; *observo*, Latin.] 1. Respect; ceremonial reverence.—

To do *observance* on the morn of May. *Shak.*

Arcite left his bed, resolv'd to pay
Observance to the month of merry May. *Dryd.*

2. Religious rite.—Some represent to themselves the whole of religion as consisting in a few easy *observances*. *Rogers.* 3. Attentive practice.—

Use all th' *observance* of civility. *Shak.*

Love rigid honesty
And strict *observance* of impartial laws. *Rose.*—If the divine laws were proposed to our *observance*, with no other motive than the advantages attending it, they would be little more than an advice. *Rogers.* 4. Rule of practice.—

There are other strict *observances*;
As, not to see a woman. *Shak.*

5. Careful obedience.—We must attend our Creator in all those ordinances which he has prescribed to the *observance* of his church. *Rogers.* 6. Observation; attention.—There can be no observation or experience of greater certainty, as to the increase of mankind, than the strict and vigilant *observance* of the calculations and registers of the bills of births and deaths. *Hale.* 7. Obedient regard; reverential attention.—Having had such experience of his fidelity and *observance* abroad, he

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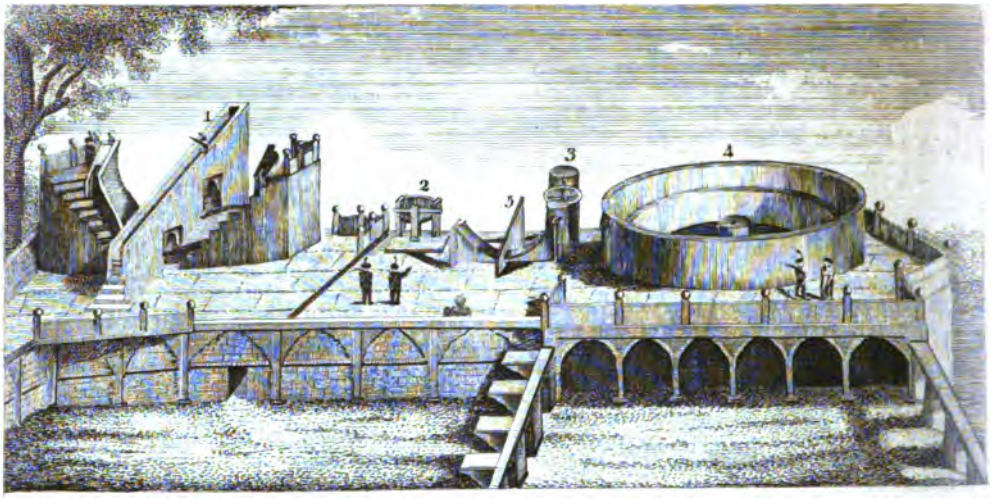
Observatory at Benares.



Implements for Purifying OILS

Fig. 1.

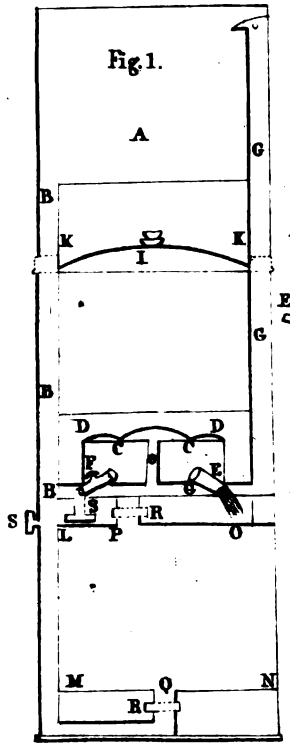


Fig. 3.

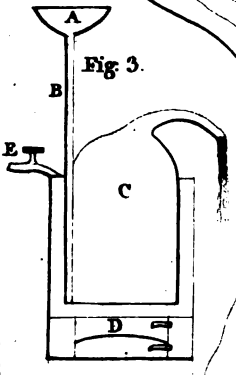


Fig. 4

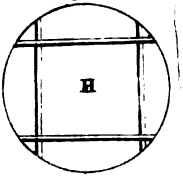
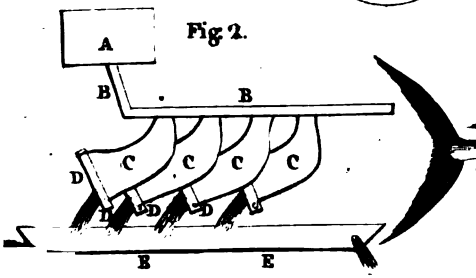
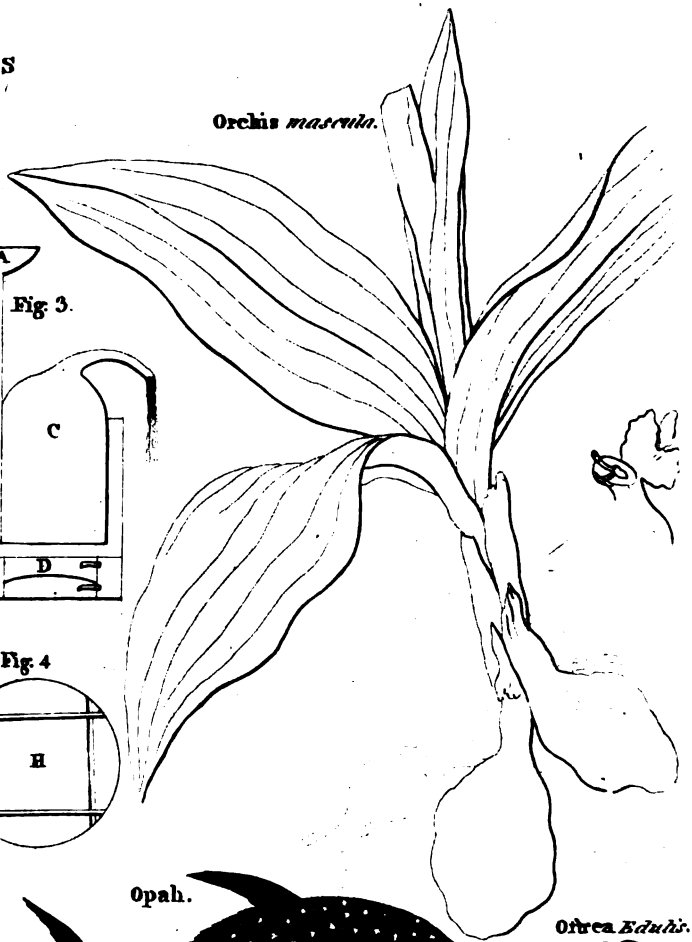


Fig. 2.



Orchis *mascula.*



Opah.

Ostrea *Edulis.*

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T. Clerk Sculpt.

he found himself engaged in honour to support him. *Wotton.*

(1.) * OBSERVANT. *adj.* [*observans*, Latin.] 1. Attentive; diligent; watchful.—These writers were *observant* spectators of those masters they admired. *Raleigh.*—

Wand'ring from clime to clime *observant* stray'd,
Their manners noted. *Pope.*

2. Obedient; respectful: with *of*.—We are told how *observant* Alexander was *of* his master Aristotle. *Digby.* 3. Respectfully attentive: with *of*.—

She now *observant of* the parting ray,
Eyes the calm sun-set of thy various day. *Pope.*

4. Meanly dutiful; submissive.—How could the most base men attain to honour but by such an *observant* slavish course. *Raleigh.*

(2.) * OBSERVANT. *n. s.* [This word has the accent on the first syllable in *Shakespeare*.] A slavish attendant. Not in use.

These kind of knaves in this plainness,
Harbour more craft, and more corrupter ends,
Than twenty silky ducking *observants*,
That stretch their duties nicely. *King Lear.*

(1.) * OBSERVATION. *n. s.* [*observatio*, from *observo*, Latin; *observation*, French.] 1. The act of observing, noting, or remarking.—These cannot be infused by *observation*, because they are the rules by which men take their first apprehensions and *observations* of things. *South.*—The rules of our practice are taken from the conduct of such persons as fall within our *observation*. *Rogers.* 2. Notion gained by observing; note; remark; animadversion.—We shall find the greatest advantage by making wise *observations* on our conduct, and of the events attending it. *Watts.* 3. Obedience; ritual practice.—He freed the Christian church from the external *observation* and obedience of all such legal precepts as were not simply and formally moral. *White.*

(2.) OBSERVATION, among navigators, signifies the taking the sun's or the stars meridian altitude, in order thereby to find the latitude.

* OBSERVATOR. *n. s.* [*observateur*, Fr. from *observo*, Lat.] One that observes; a remarker.—The *observator* of the bills of mortality, hath given us the best account of the number that the late plagues have swept away. *Hale.*—

She may be handsome, yet be chaste, you say;—
Good *observator*, not so fast away. *Dryden.*

(1.) * OBSERVATORY. *n. s.* [*observatoire*, Fr.] A place built for astronomical observations.—Another was found near the *observatory* in Greenwich Park. *Woodward.*

(2.) *An* OBSERVATORY, is generally erected on some eminence, covered with a terrace. There are several good observatories in the Scottish Universities; and an excellent one is erected at Dublin. The most celebrated observatories are the following:

(3.) OBSERVATORY AT BENARES. Of this Sir Robert Barker gives the following account, *Phil. Trans.* Vol. LXVII. p. 598. "Benares in the East Indies, one of the principal seminaries of the Bramins or priests of the original Gentoos of Hindostan, continues still to be the place of resort of that sect of people; and there are many public charities, hospitals, and Pagodas, where some thousands of them now reside. Having frequently heard that the ancient Bramins had a knowledge of astronomy, and being confirmed in this by their information of an approaching eclipse both of the sun and moon, I made enquiry, when at that place in 1772, among the principal Bramins, to endeavour to get some information relative to the manner in which they were acquainted of an approaching eclipse. The most intelligent that I could meet with, however, gave me but little satisfaction: I was told, that these matters were confined to a few, who were in possession of certain books and records; some containing the mysteries of their religion, and others the tables of astronomical observations, written in the Shanscrit language, which few understood but themselves: that they would take me to a place which had been constructed for the purpose of making such observations as I was inquiring after, and from whence they supposed the learned Bramins made theirs. I was then conducted to an ancient building of stone, the lower part of which, in its present situation, was converted into a stable for horses, and a receptacle for lumber; but by the number of court-yards and apartments, it appeared that it must once have been an edifice for the use of some public body of people. We entered this building, and went up a staircase to the top of a part of it, near to the river Ganges, that led to a large terrace, where, to my surprise and satisfaction, I saw a number of instruments yet remaining, in the greatest preservation, stupendously large, immoveable from the spot, and built of stone, some of them being upwards of 20 feet in height; and although they are said to have been erected 200 years ago, the graduations and divisions on the several arcs appeared as well cut and as accurately divided, as if they had been the performance of a modern artist. The execution in the construction of these instruments exhibited a mathematical exactness in the fixing, bearing, fitting of the several parts, in the necessary and sufficient supports to the very large stones that composed them, and in the joining and fastening each into the other by means of lead and iron. The situation of the two large quadrants of the instrument, *plate* 247, *fig.* 1. whose radius is 9 feet 2 inches, by their being at right angles with a gnomon at 25° elevation, are thrown into such an oblique situation as to render them the most difficult, not only to construct of such a magnitude, but to secure in their position for so long a period, and affords a striking instance of the ability of the architect in their construction: for, by the shadow of the gnomon thrown on the quadrants, they do not appear to have altered in the least from their original position; and so true is the line of the gnomon, that, by applying the eye to a small iron ring of an inch diameter at one end, the sight is carried through three others of the same dimension, to the extremity at the other end, distant 38 feet 8 inches, without obstruction; such is the firmness and art with which this instrument has been executed. This performance is the more wonderful and extraordinary, when compared

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with the works of the artificers of Hindoſtan at this day, who are not under the immediate direction of an European mechanic; but arts appear to have declined equally with ſcience in the eaſt. Lieut. Col. Archibald Campbell, at that time chief engineer in the Eaſt India Company's ſervice at Bengal, made a perſpective drawing of the whole of the apparatus that could be brought within his eye at one view; but I lament he could not repreſent ſome very large quadrants, whoſe radii were about 20 feet, they being on the ſide from whence he took his drawing. Their deſcription however is, that they are exact quarters of circles of different radii, the largeſt of which I judged to be 20 feet. conſtructed very exactly on the ſides of ſtone walls, built perpendicular, and ſituated, I ſuppoſe, in the meridian of the place: a braſs pin is fixed at the centre or angle of the quadrant, from whence, the Bramin informed me, they ſtretched a wire to the circumference when an obſervation was to be made; from which it occurred to me, the obſerver muſt have moved his eye up or down the circumference, by means of a ladder or ſome ſuch contrivance, to raiſe and lower himſelf, until he had diſcovered the altitude of any of the heavenly bodies in their paſſage over the meridian, ſo expreſſed on the arcs of theſe quadrants. Theſe arcs were very exactly divided into 9 large ſections; each of which again into ten, making 90 leſſer diviſions or degrees; and thoſe alſo into 20 expreſſing three minutes each, of about two 10ths of an inch aſunder; ſo that it is probable they had ſome method of dividing even theſe into more minute diviſions at the time of obſervation. My time would only permit me to take down the particular dimenſions of the moſt capital inſtrument, or the greateſt equinoctial ſun-dial, repreſented by *Fig.* 1. which appears to be an inſtrument to expreſs ſolar time by the ſhadow of a gnomon upon two quadrants, one ſituated to the E. and the other to the W. of it; and indeed the chief part of their inſtruments at this place appear to be conſtructed for the ſame purpoſe, except the quadrants, and a braſs inſtrument. *Fig.* 2. is another inſtrument for the purpoſe of determining the exact hour of the day by the ſhadow of a gnomon, which ſtands perpendicular to, and in the centre of a flat circular ſtone, ſupported in an oblique ſituation by means of four upright ſtones and a croſs-piece; ſo that the ſhadow of the gnomon, which is a perpendicular iron rod, is thrown upon the diviſion of the circle deſcribed on the face of the flat circular ſtone. *Fig.* 3. is a braſs circle about two feet diameter, moving vertically upon two pivots between two ſtone pillars, having an index or hand turning round horizontally on the centre of this circle, which is divided into 360 parts; but there are no counter diviſions on the index to ſubdivide thoſe on the circle. This inſtrument appears to be made for taking the angle of a ſtar at ſetting or riſing, or for taking the azimuth or amplitude of the ſun at riſing or ſetting. The uſe of the inſtrument, *fig.* 4. I was at a loſs to account for. It conſiſts of two circular walls; the outer of which is about 40 feet diameter, and 8 feet high; the wall within about half that height, and appears intended for a place to ſtand on to obſerve the diviſions on the upper circle of the outer wall, rather than for any other purpoſe; and yet both circles are divided into 360°, each degree being ſubdivided into 20 leſſer diviſions, the ſame as the quadrants. There is a door-way to paſs into the inner circle, and a pillar in the centre, of the ſame height with the lower circle, having a hole in it, being the centre of both circles, and ſeems to be a ſocket for an iron rod to be placed perpendicular into it. The diviſions on theſe, as well as all the other inſtruments, will bear a nice examination with a pair of compaſſes. *Fig.* 5. is a ſmaller equinoctial ſun-dial, conſtructed upon the ſame principle as the large one, *fig.* 1. I cannot quit this ſubject without obſerving that the Bramins, without the aſſiſtance of optical glaſſes, had nevertheleſs an advantage unexperienced by the obſervers of the more northern climates. The ſerenity and clearneſs of the atmoſphere in the night-time in the Eaſt Indies, except at the ſeaſons of changing the monſoons or periodical winds, is difficult to expreſs to thoſe who have not ſeen it, becauſe we have nothing in compariſon to form our ideas upon: it is clear to perfection, a total quietude ſubſiſts, ſcarcely a cloud to be ſeen, and the light of the heavens by the numerous appearance of the ſtars, affords a proſpect both of wonder and contemplation. This obſervatory is ſaid to have been built by the order of the emperor Ackbar: for as this wiſe prince endeavoured to improve the arts, ſo he wiſhed alſo to recover the ſciences of Hindoſtan, and therefore directed that three ſuch places ſhould be erected; one at Delhi, another at Agra, and the third at Benares."

(4.) *The* OBSERVATOTY AT CAMBRIDGE. Over the great gate of Trinity College, there is an obſervatory which is called SIR ISAAC NEWTON'S, becauſe this great philoſopher had uſed it; but it is gone to decay. It ought to be repaired and preſerved, in memory of that truly great man. In St John's, too, there is a ſmall one. The late ingenious Mr Cotes uſed to give lectures in Sir Iſaac Newton's on experimental philoſophy.

(5.) OBSERVATORY AT EDINBURGH. See EDINBURGH, § 18.

(6.) OBSERVATORY AT GREENWICH was built in 1676, by order of Charles II. at the ſolicitations of Sir Jonas Moore and Sir Chriſtopher Wren; and furniſhed with the moſt accurate inſtruments; particularly a noble ſextant of ſeven feet radius, with teleſcopic ſights.

(7.) *The* OBSERVATORY AT OXFORD is a very excellent one, built by the truſtees of Dr Radcliffe, at the expence of nearly 30,000l.

(8.) *The* OBSERVATORY AT PARIS was built by the order of Lewis XIV. in the Fauxbourg St Jacques. It is a very ſingular, but withal a very magnificent building, the deſign of Monſieur Perault: it is 80 feet high; and at top is a terrace. The difference in longitude between this and the Greenwich obſervatory is 2° 20'. In it is a cave or cellar, of 170 feet deſcent, for experiments that are to be made far from the ſun, &c. particularly ſuch as relate to congelations, refrigerations, indurations, conſervations, &c.

(9.) *The*

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(9.) *The* OBSERVATORY AT PEKIN. Father Le Compte describes a very magnificent observatory, erected and furnished by the predecessor of the late emperor of China, in his capital, at the intercession of some Jesuit missionaries, principally Father Verbeist, whom he made his chief observer. The instruments are exceedingly large; but the division less accurate, and the contrivance in some respects less commodious, than that of the Europeans. The chief are, an armillary zodiacal sphere of six feet diameter; an equinoctial sphere of six feet diameter; an azimuthal horizon of six feet diameter; a large quadrant six feet radius; a sextant eight feet radius; and a celestial globe six feet diameter.

(10.) *The* OBSERVATORY OF TYCHO BRAHE was in the little island Ween, or Scarlet Island, between the coasts of Schonen and Zealand in the Baltic. It was erected and furnished with instruments at his own expense, and called by him *Uraniburg*. Here he spent 20 years in observing the stars; the result is his catalogue.

(11.) OBSERVATORY, PORTABLE. See ASTRONOMY, *Index*.

(1.) * *To* OBSERVE. *v. a.* [*observer*, Fr. *observo*, Lat.] 1. To watch; to regard attentively.—Remember, as thine eye *observes* others, so art thou *observed* by angels and by men. *Taylor*. 2. To find by attention; to note.—It is *observed*, that many men who have seemed to repent when they have thought death approaching, have yet, after it hath pleased God to restore them to health, been as wicked, perhaps worse, as ever they were. *Duty of Man*.—If our idea of infinity be got from the power we *observe* in ourselves, of repeating without end our own ideas, it may be demanded why we do not attribute infinity to other ideas, as well as those of space and duration. *Locke*.—One may *observe* them discourse and reason pretty well of several other things, before they can tell twenty. *Locke*. 3. To regard or keep religiously.—A night to be much *observed* unto the Lord, for bringing them out of Egypt. *Ex.* xii. 42. 4. To practise ritually.—In the days of Enoch, people *observed* not circumcision, or the Sabbath. *White*. 5. To obey; to follow.

(2.) * *To* OBSERVE. *v. n.* 1. To be attentive.—*Observing* men may form many judgments by the rules of similitude and proportion, where causes and effects are not entirely the same. *Watts's Logick*. 2. To make a remark.—I *observe*, that when we have an action against any man, we must for all that look upon him as our neighbour, and love him as ourselves. *Kettlewell*.—Wherever I have found her notes to be wholly another's, I have barely quoted the true proprietor, without *observing* upon it. *Pope's Letters*.

* OBSERVER. *n. s.* [from *observe*.] 1. One who looks vigilantly on persons and things; close remarker.—

He is a great *observer*; and he looks
Quite thro' the deeds of men. *Shak. J. Cæsar*.
There is a kind of character in thy life,
That to th' *observer* doth thy history
Fully unfold. *Shak. Measure for Measure*.
Careful *observers* may foretel the hour,
By sure prognostics, when to dread a show'r.
Swift.

2. One who looks on; the beholder.—

If a slow pac'd star had stol'n away
From the *observer's* marking, he might stay
Three hundred years to see't again. *Donne*.

—If he cannot wholly avoid the eye of the *observer*, he hopes to distract it at least by a multiplicity of objects. *South*.—Sometimes purulent matter may be discharged from the glands in the upper part of the wind-pipe, while the lungs are sound and uninfected, which now and then has imposed on undistinguishing *observers*. *Blackmore*. 3. One who keeps any law, or custom, or practice.—Many nations are superstitious and diligent *observers* of old customs, which they receive by tradition. *Spenser*.—The king, after the victory, as one that had been bred under a devout mother, and was in his nature a great *observer* of religious forms, caused Te Deum to be solemnly sung. *Bacon*.—He was so strict an *observer* of his word, that no consideration whatever could make him break it. *Prior*.—Himself often read useful discourses to his servants on the Lord's day, of which he was always a very strict and solemn *observer*. *Atterbury*.

* OBSERVINGLY. *adv.* [from *observing*.] Attentively; carefully.—

There is some soul of goodness in things evil,
Would men *observingly* distil it out. *Shak*.

* OBSESSION. *n. s.* [*obsessio*, Lat.] 1. The act of besieging. 2. The first attack of Satan, antecedent to possession.

OBSFELD, a town of Saxony, in Magdeburg.

OBSIDIAN, or } in the natural history
OBSIDIANUS LAPIS, } of the ancients, the name of a stone which they have also described under the name of the *Chian marble*. It is a very smooth and hard marble, extremely difficult to cut, but capable of a fine polish; and was used among the ancient Greeks for the purpose of making reflecting mirrors. The name *obsidianus* seems only a false spelling of the word *opsianus*, απο της οψεως, from seeing the images of things in it. See GALLINACEUS LAPIS; and MINERALOGY, *Part* II. *Ch.* II. *Cl.* I. *Ord.* I. *Gen.* VII. *Sp.* 11.

* OBSIDIONAL *adj.* [*obsidionalis*, Latin.] Belonging to a siege. *Dict*.

OBSIDIONALIS, a Roman crown. See CROWN, N° VI. § iii. 8.

OBSKAIA, a bay of Russia, in the Frozen Ocean; 360 miles long, and from 44 to 60 broad. Lon. from 90° to 94° E. of Ferro. Lat. 66° 40′ to 72° 15′ N.

* OBSOLETE. *adj.* [*obsoletus*, Lat.] Worn out of use; disused; unfashionable.—*Obsolete* words may be laudably revived, when they are more sounding or more significant than those in practice. *Dryden*.—What if there be an old dormant statute or two against him, are they not now *obsolete*? *Swift*.

* OBSOLETENESS. *n. s.* [from *obsolete*.] State of being worn out of use; unfashionableness.

(1.) OBSOPÆUS, John, a German physician, born at Brettin in the Palatinate, in 1556. He was educated at Neunhaus, and at Heidelburg, under Zach. Urfinus. He studied physic at Franckfort on the Maine, and, after travelling through England and Holland, was made pro-

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feſſor of medicine at Heidelburg. He publiſhed ſeveral works, and died in 1596, aged 40.

(2.) OBSOPŒUS, Simon, brother to John, born in 1575, alſo acquired reputation as a phyſician, and became profeſſor at Heidelburg, where he publiſhed ſome tracts, and died in 1619, aged 44.

* OBSTACLE. *n. ſ.* [*obſtacle*, Fr. *obſtaculum*, Lat.] Something oppoſed; hinderance; obſtruction.

Conſcience is a bluſhing ſhame-fac'd ſpirit,
That mutinies in a man's boſom: it fills
One full of *obſtacles*. *Shak. Rich.* III.
If all *obſtacles* were cut away,
And that my path were even to the crown.
Shak. Rich. III.

—Diſparity in age ſeems a greater *obſtacle* to an intimate friendſhip than inequality of fortune. *Collier on Friendſhip.*—Some conjectures about the origin of mountains and iſlands, I am obliged to look into, that they may not remain as *obſtacles* to the leſs ſkilful. *Woodward's Nat. Hiſt.*—What more natural and uſual *obſtacle* to thoſe who take voyages, than winds and ſtorms. *Pope.*

OBSTETRICAL. See OBSTETRICK.

* OBSTETRICATION. *n. ſ.* [from *obſtetricor*, Lat.] The office of a midwife.

(1.) * OBSTETRICK. *adj.* [from *obſtetrix*, Lat.] Midwiſiſh; befitting a midwife; doing the midwife's office.—

There all the learn'd ſhall at the labour ſtand,
And Douglas lend his ſoft *obſtetrick* hand. *Pope.*

(2.) OBSTETRICK ART, or (2.) OBSTETRICS, *n. ſ.* } MIDWIFERY.

* OBSTINACY. *n. ſ.* [*obſtination*, Fr. *obſtinatio*, Lat. from *obſtinate*.] Stubbornneſs; contumacy; pertinacy; perſiſtency.—Chuſing rather to uſe extremities, which might drive men to deſperate *obſtinacy*, than apply moderate remedies. *K. Ch.*—Moſt writers uſe their words looſely and uncertainly, and do not make plain and clear deductions of words one from another, which were not difficult to do, did they not find it convenient to ſhelter their ignorance, or *obſtinacy*, under the obſcurity of their terms. *Locke.*—

What crops of wit and honeſty appear,
From ſpleen, from *obſtinacy*, hate, or fear! *Pope.*

* OBSTINATE. *adj.* [*obſtinatus*, Lat.] Stubborn; contumacious; fixed in reſolution. Abſolutely uſed, it has an ill ſenſe; but relatively, it is neutral.—

The queen is *obſtinate*. *Shak. Henry* VIII.
Except you mean with *obſtinate* repulſe
To ſlay your ſov'reign. *Shakeſp.*

—I have known great cures done by *obſtinate* reſolutions of drinking no wine. *Temple.*—

Yet thought ſhe was not *obſtinate* to die,
Nor deem'd the death ſhe proffis'd was ſo nigh.
Dryden.

Look on Simo's mate;
No aſs ſo meek, no aſs ſo *obſtinate*. *Pope.*

* OBSTINATELY. *adv.* [from *obſtinate*.] Stubbornly; inflexibly; with unſhaken determination.—Pembroke abhorred the war as *obſtinately* as he loved hunting and hawking. *Clarendon.*—

Fix'd on his aim, and *obſtinately* bent
To die undaunted, or to circumvent. *Dryden.*

The man reſolv'd, and ſteady to his truſt,
Inflexible to ill, and *obſtinately* juſt,
Can the rude rabble's influence deſpiſe. *Addiſ.*

My ſpouſe maintains her royal truſt,
Tho' tempted, chaſte, and *obſtinately* juſt. *Pope.*

* OBSTINATENESS. *n. ſ.* [from *obſtinate*.] Stubbornneſs.

OBSTIPATIO. See MEDICINE, *Index.*

* OBSTIPATION. *n. ſ.* [from *obſtipo*, Latin.] The act of ſtopping up any paſſage.

* OBSTREPEROUS. *adj.* [*obſtreperus*, Latin.] Loud; clamorous; noiſy; turbulent; vociferous.—Theſe *obſtreperous* ſcepticks are the bane of divinity. *Howel's Vocal Foreſt.*—Theſe *obſtreperous* villains ſhout, and know not for what they make a noiſe. *Dryden.*—The players do not only connive at his *obſtreperous* approbation, but repair at their own coſt whatever damages he makes. *Spect.*

* OBSTREPEROUSLY. *adv.* [from *obſtreperous*.] Loudly; clamorouſly; noiſily.

* OBSTREPEROUSNESS. *n. ſ.* [from *obſtreperous*.] Loudneſs; clamour; noiſe; turbulence.

* OBSTRICTION. *n. ſ.* [from *obſtrictus*, Lat.] Obligation; bond.—

He hath full right t'exempt
Whom ſo it pleaſes him by choice,
From national *obſtriction*. *Milton's Agoniſtes.*

* *To* OBSTRUCT. *v. a.* [*obſtruo*, Lat.] 1. To block up; to bar.—

He them beholding, ſoon
Comes down to ſee their city, ere the tow'r
Obſtruct Heav'n-tow'rs. *Milton's Par. Loſt.*

—In their paſſage through the glands in the lungs, they *obſtruct* and ſwell them with little tumors. *Blackmore.*—Fat people are ſubject to weakneſs in fevers, becauſe the fat, melted by feveriſh heat, *obſtructs* the ſmall canals. *Arbuthnot.* 2. To oppoſe; to retard; to hinder; to be in the way of.—

No cloud interpoſ'd,
Or ſtar to *obſtruct* his ſight. *Milton.*

* OBSTRUCTER. *n. ſ.* [from *obſtruct*.] One that hinders or oppoſes.

(1.) * OBSTRUCTION. *n. ſ.* [*obſtructio*, Latin; *obſtruction*, Fr. from *obſtruct*.] 1. Hinderance; difficulty.—

Sure God by theſe diſcov'ries did deſign
That his clear light thro' all the world ſhould ſhine;
But the *obſtruction* from that diſcord ſprings,
The prince of darkneſs makes 'twixt Chriſtian kings.
Denham.

2. Obſtacle; impediment; that which hinders.—All *obſtructions* in parliament, that is, all freedom in differing in votes, and debating matters with reaſon and candour, muſt be taken away. *King Charles.*—In his winter quarters the king expected to meet with all the *obſtructions* and difficulties his enraged enemies could lay in his way. *Clarendon.*—Whenever a popular aſſembly, free from *obſtructions*, and already poſſeſſed of more power than an equal balance will allow, ſhall continue to think that they have not enough, I cannot ſee how the ſame cauſes can produce different effects among us, from what they did in Greece and Rome. *Swift.* 3. [In phyſick.]—The blocking up of any canal in the human body, ſo as to prevent the flowing of any fluid through it, on account of the increaſed bulk of that fluid, in proportion to the diameter of the veſſel. *Quincy.* 4. In *Shakeſpeare*, it once ſignifies ſomething heaped together.—

Aye,

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Aye, but to die, and go we know not where;
To lie in cold *obſtruction*, and to rot;
This ſenſible warm motion to become
A kneaded clod, *Shak. Meaſure for Meaſure.*

2. OBSTRUCTION, in medicine, (§ 1, *def.* 3.) is ſuch an obturation of the veſſels as prevents the circulation of fluids, whether ſound and vital, or morbid and peccant, through them.

(1.) * OBSTRUCTIVE. *adj.* [*obſtructif*, Fr. from *obſtruct*.] Hindering; cauſing impediment.—Having thus ſeparated this doctrine of God's predetermining all events from three other things confounded with it, it will now be diſcernible how noxious and *obſtructive* this doctrine is to the ſuperſtructing all good life. *Hammond.*

(2.) * OBSTRUCTIVE. *n. ſ.* Impediment; obſtacle.—The ſecond *obſtructive* is that of the fiduciary, that faith is the only inſtrument of his juſtification, and excludes good works. *Hammond.*

* OBSTRUENT. *adj.* [*obſtruens*, Lat.] Hindering; blocking up.

* OBSTUPEFACTION. *n. ſ.* [*obſtupefacio*, Lat.] The act of inducing ſtupidity, or interruption of the mental powers.

* OBSTUPEFACTIVE. *adv.* [from *obſtupefacio*, Latin.] Obſtructing the mental powers; ſtupifying.—The force of it is *obſtupefactive*, and no other. *Abbot.*

(1.) * *To* OBTAIN. *v. a.* [*obtenir*, Fr. *obtineo*, Lat.] 1. To gain; to acquire; to procure.—May be that I may *obtain* children by her. *Gen.* xvi. 2.—We have *obtained* an inheritance. *Eph.* i. 11.—The juices of the leaves are *obtained* by expreſſion. *Arb.* 2. To impetrate; to gain by the conceſſion or excited kindneſs of another.—In ſuch our prayers cannot ſerve us as means to *obtain* the thing we deſire. *Hooker.*—Having *obtained* eternal redemption for us. *Heb.* ix. 12.—If they could not be *obtained* of the proud tyrant, then to conclude peace with him upon any conditions. *Knolles.*—

Some pray for riches, riches they *obtain*;
But watch'd by robbers for their wealth are ſlain. *Dryden.*

—The concluſion of the ſtory I forebore, becauſe I could not *obtain* from myſelf to ſhew Abſalom unfortunate. *Dryden.*—Whatever once is denied them, they are certainly not to *obtain* by crying. *Locke on Education.*

(2.) * *To* OBTAIN. *v. a.* 1. To continue in uſe.—The Theodoſian Code, ſeveral hundred years after Juſtinian's time, did *obtain* in the weſtern parts of Europe. *Baker.* 2. To be eſtabliſhed; to ſubſiſt in nature or practice.—

Our impious ire no longer ſhall *obtain*,
Brothers no more by brothers ſhall be ſlain. *Dryden.*

—The ſituation of ſun and earth, which the theoriſt ſuppoſes, is ſo far from being preferable to this which, at preſent, *obtains*, that this hath infinitely the advantage of it. *Woodw.*—Where waſting the public treaſure has *obtained* in a court, all good order is baniſhed. *Dauenant.*—The general laws of fluidity, elaſticity, and gravity, *obtain* in animate and inanimate tubes. *Cheyne's Phil. Prin.* 3. To prevail; to ſucceed. Not in uſe.—There is due from the judge to the advocate, ſome commendation where cauſes are fair pleaded, eſpecially towards the ſide which *obtaineth* not. *Bacon.*

* OBTAINABLE. *adj.* [from *obtain*.] 1. To be procured.—Spirits which come over in diſtillations, miſcible with water, and wholly combuſtible, are *obtainable* from plants by previous fermentation. *Arbuthnot on Aliments.* 2. To be gained.—What thinks he of his redemption, and the rate it coſt, not being *obtainable* unleſs God's only Son would come down from heaven, and be made man, and pay down his own life for it? *Kettlewell.*

* OBTAINER. *n. ſ.* [from *obtain*.] He who obtains.

* *To* OBTEMPERATE. *v. a.* [*obtemperer*, Fr. *obtempero*, Lat.] To obey. *Dict.*

* *To* OBTEND. *v. a.* [*obtendo*, Lat.] 1. To oppoſe; to hold out in oppoſition. 2. To pretend; to offer as the reaſon of any thing.—

Thou doſt with lies the throne invade,
Obtending Heav'n for whate'er ills befal. *Dryd.*

* OBTENEBRATION. *n. ſ.* [*ob* and *tenebræ*, Lat.] Darkneſs; the ſtate of being darkened; the act of darkening; cloudineſs.—In every megrim or vertigo, there is an *obtenebration* joined with a ſemblance of turning round. *Bacon's Nat. Hiſt.*

* OBTENSION. *n. ſ.* [from *obtend*.] The act of obtending.

* *To* OBTEST. *v. a.* [*obteſtor*, Latin.] To beſeech; to ſupplicate.—

Suppliants demand
A truce; with olive branches in their hand,
Obteſt his clemency. *Dryden.*

* OBTESTATION. *n. ſ.* [*obteſtatio*, Latin; from *obteſt*.] Supplication; entreaty.

* OBTRECTATION. *n. ſ.* [*obtrecto*, Latin.] Slander; detraction; calumny.

* *To* OBTRUDE. *v. a.* [*obtrudo*, Latin.] To thruſt into any place or ſtate by force or impoſture; to offer with unreaſonable importunity.—The thing they ſhun doth follow them, truth, as it were, even *obtruding* itſelf into their knowledge. *Hooker.*—There may be as great a vanity in retiring and withdrawing men's conceits from the world, as in *obtruding* them. *Bacon.*—Some things are eaſily granted; the reſt ought not to be *obtruded* upon me with the point of the ſword. *King Charles.*—Who can abide, that againſt their own doctors fix books ſhould, by their fatherhoods of Trent, be under pain of a curſe, imperiouſly *obtruded* upon God and his church? *Hall.*

Why ſhouldſt thou then *obtrude* this diligence
In vain, where no acceptance it can find? *Milt.*

—Whatever was not by them thought neceſſary, muſt not by us be *obtruded* on, or forced into that catalogue. *Hammond.*—A cauſe of common error is the credulity of men; that is, an eaſy aſſent to what is *obtruded*, or believing at firſt ear what is delivered by others. *Brown.*—The objects of our ſenſes *obtrude* their particular ideas upon our minds, whether we will or no. *Locke.*

Whether thy great forefathers came
From realms that bear Veſputio's name;
For ſo conjectures would *obtrude*,
And from thy painted ſkin conclude. *Swift.*

* OBTRUDER. *n. ſ.* [from *obtrude*.] One that obtrudes.—Do juſtice to the inventors or publiſhers of the true experiments, as well as upon the *obtruders* of falſe ones. *Boyle.*

* OBTRUSION.

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* OBTRUSION. *n. f.* [from *obtrufus*, Lat.] The act of obtruding.—No man can think it other then ſlavery, by ſavage rudeneſs and importunate *obtruſions* of violence, to have the miſt of his errour and paſſion diſpelled. *K. Charles.*

* OBTRUSIVE. *adj.* [from *obtrude.*] Inclined to force one's ſelf, or any thing elſe, upon others.—

Not obvious, not *obtruſive*, but retir'd
The more deſirable. *Milton.*

* *To* OBTUND *v. a.* [*obtundo*, Latin.] To blunt; to dull; to quell; to deaden.—Avicen countermands letting blood in cholerick bodies, becauſe he eſteems the blood a bridle of gall, *obtunding* its acrimony and fierceneſs. *Harvey.*

* OBTURATION. *n. ſ.* [from *obturatus*, Lat.] The act of ſtopping up any thing with ſomething ſmeared over it.

OBTURATOR, in anatomy. See ANATOMY, *Index.*

* OBTUSANGULAR. *adj.* [from *obtuſe* and *angle.*] Having angles larger than right angles.

(1.) * OBTUSE. *adj.* [*obtuſus*, Latin.] 1. Not pointed; not acute. 2. Not quick; dull; ſtupid.

The ſenſes then
Obtuſe, all taſte of pleaſures muſt forego. *Milt.*

3. Not ſhrill; obſcure: as an *obtuſe* ſound.

(2.) OBTUSE is uſed in oppoſition to acute or ſharp.

OBTUSE-ANGLED, *adj.* having blunted angles.

* OBTUSELY. *adv.* [from *obtuſe.*] 1. Without a point 2. Dully; ſtupidly.

* OBTUSENESS. *n. ſ.* [from *obtuſe.*] Bluntneſs; dulneſs.

* OBTUSION. *n. ſ.* [from *obtuſe*] 1. The act of dulling. 2. The ſtate of being dulled.—*Obtuſion.* of the ſenſes, internal and external. *Harvey.*

OBVA, a river of Ruſſia, in the prov. of Perm, which runs into the Kama, near Obvinſk.

* OBVENTION. *n. ſ.* [*obvenio*, Latin.] Something happening not conſtantly and regularly, but uncertainly; incidental advantage.—When the country grows more rich and better inhabited, the tithes and other *obventions*, will alſo be more augmented and better valued. *Spenſer.*

* *To* OBVERT. *v. a.* [*obverto*, Lat.] To turn towards.—The laborant with an iron rod ſtirred the kindled part of the nitre, that the fire might be more diffuſed, and more parts might be *obverted* to the air. *Boyle.*—A man can from no place behold, but there will be amongſt innumerable ſuperficiculæ, that look ſome one way, and ſome another, enough of them *obverted* to his eye to afford a confuſed idea of light. *Boyle.*—An erect cone placed in an horizontal plane, at a great diſtance from the eye, we judge to be nothing but a flat circle, if its baſe be *obverted* towards us. *Watts.*

* *To* OBVIATE. *v. a.* [from *obvius*, Lat. *obvier*, Fr.] To meet in the way; to prevent by interception.—To lay down every thing in its full light, ſo as to *obviate* all exceptions, and remove every difficulty, would carry me out too far. *Woodward.*

OBVINSK, a town of Ruſſia, in Perm, at the conflux of the Obva and Kama; 60 miles N. of Perm. Lon. 74. 0. E. Ferro. Lat. 58. 44. N.

* OBVIOUS. *adj.* [*obvius*, Latin.] 1. Meeting any thing; oppoſed in front to any thing.—

I to the evil turn
My *obvious* breaſt; arming to overcome
By ſuffering. *Milton.*

2. Open; expoſed.—

Whether ſuch room in nature unpoſſeſt
Only to ſhine, yet ſcarce to contribute
Each orb a glimpſe of light, convey'd ſo far
Down to this habitable, which returns
Light back to them, is *obvious* to diſpute. *Milton.*

3. Eaſily diſcovered; plain; evident; eaſily found: *Swift* has uſed it harſhly for *eaſily intelligible.*—

Why was the ſight
To ſuch a tender ball as th' eye confin'd,
So *obvious* and ſo eaſy to be quench'd? *Milton.*
Entertain'd with ſolitude,
Where *obvious* duty ere while appear'd unſought. *Milton.*

—They are ſuch lights as are only *obvious* to every man of ſenſe, who loves poetry and underſtands it. *Dryden.*—I am apt to think many words difficult or obſcure, which are *obvious* to ſcholars. *Swift.*—Theſe ſentiments, whether they be impreſſed on the ſoul, or ariſe as *obvious* reflections of our reaſon, I call natural, becauſe they have been found in all ages. *Rogers.*—All the great lines of our duty are clear and *obvious.* *Rogers.*

* OBVIOUSLY. *adv.* [from *obvious.*] 1. Evidently; apparently.—All purely identical propoſitions *obviouſly* and at firſt bluſh, contain no inſtructions. *Locke.* 2. Eaſily to be found.—For France, Spain, and other foreign countries, the volumes of their laws and lawyers have *obviouſly* particulars concerning place and precedence of their magiſtrates and dignities. *Selden.* 3. Naturally.—We may then more *obviouſly*, yet truly, liken the civil ſtate to bulwarks, and the church to a city. *Holyday.*

* OBVIOUSNESS. *n. ſ.* [from *obvious.*] State of being evident or apparent.—Slight experiments are more eaſily and cheaply tried; I thought their eaſineſs or *obviouſneſs* fitter to recommend than depreciate them. *Boyle.*

* *To* OBUMBRATE. *v. a.* [*obumbro*, Latin.] To ſhade; to cloud.—The rays of royal majeſty, reverberated ſo ſtrongly upon Villerio, diſpelled all thoſe clouds which did hang over and *obumbrate* him. *Howel's Vocal Foreſt.*

* OBUMBRATION. *n. ſ.* [from *obumbro*, Lat.] The act of darkening or clouding.

(1.) OBY, or OB, a large and famous river of Aſiatic Ruſſia, which iſſues from the Altin lake, (called by the Ruſſians *Teleſkoi-Oſero*,) in lat. 52°. and lon. 103° 30'. Its name ſignifies *Great*; and accordingly in Ruſſia it is often ſtyled the *Great River.* The Calmucks and Tartars call it *Umar.* Its ſtream is very large and ſmooth, its current being uſually ſlow; and it is in general between 2 and 300 fathoms broad; though in ſome places more. It affords plenty of fiſh, and is navigable almoſt to the lake from which it ſprings. After a long winding courſe through a vaſt tract of land, in which it forms ſeveral iſlands, it empties itſelf, in latitude 67 degrees, and longitude 86 degrees, into a bay, which, extending near 400 miles farther,

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ther, joins the Frozen Ocean, in lat. 73. 30, and lon. 90. 0. The springs from which this river rises, are not very copious; but it receives in its course the waters of a great number of considerable streams. Of these, the Tom and the Irtis are the most considerable: the Tom falls into it in lat. 58. and the Irtis in lat. 61, and lon. 86. The exact course of this river was unknown till the country was surveyed by the Russians; who have given us tolerable maps of it, and of all Siberia. The Oby forms the boundary between Europe and Asia, and its course is upwards of 2000 miles in length.

(2.) OBY, a town of Norfolk, near Thurn.

OBYE, a town of France, in the dep. of Jemappes, and ci-devant prov. of Austrian Hainault, 6 miles NW. of Conde.

OCA. See OCCA, N° 1.

OCANA, a town of Spain, in New Castile; containing 3 parishes, 10 convents, and about 2000 people. In 1106, it was taken from the Moors by Alphonso VI. It is 23 miles ENE. of Toledo.

OCANNA, a town of Terra Firma.

(1.) OCCA, or OCA, a chain of mountains in Spain, extending from Tortosa in Catalonia to Burgos in Old Castile.

(2.) OCCA, a Turkish weight, equal to 2 lb. 10 oz. English avoirdupoise: 25 occas make one *Cafiz*, or Turkish corn measure.

OCCACOKE, an island near the coast of N. Carolina, 10 miles long, and from 2 to 3 broad.

OCCAM. See NOMINAL, § 2; and OCKHAM.

* OCCASION. *n. f.* [*occasion*, Fr. *occasio*, Lat.] 1. Occurrence; casualty; incident.—The laws of Christ we find rather mentioned by *occasion* in the writings of the Apostles, than any solemn thing directly written. *Hooker.* 2. Opportunity; convenience.—

Me unweeting, and unware of such mishap,
She brought to mischief through *occasion*.
Spenser.

—Because of the money returned in our sacks are we brought in, that he may seek *occasion*, fall upon us, and take us for bondmen. *Gen.* xliii. 18.—Use not liberty for an *occasion*. *Gal.* v. 13.—

Let me not let pass
Occasion which now smiles. *Milt. Par. Lost.*

I'll take th' *occasion* which he gives to bring
Him to his death. *Waller.*

With a mind as great as theirs he came
To find at home *occasion* for his fame. **Waller.*

—From this admonition they took only *occasion* to redouble their fault, and to sleep again. *South.*—This, one has *occasion* of observing more than once in several fragments of antiquity, that are still to be seen in Rome. *Addison on Italy.* 3. Accidental cause.—Have you ever heard what was the *occasion* and first beginning of this custom. *Spenser on Ireland.*—That woman that cannot make her fault her husband's *occasion*, let her never nurse her child herself, for she will breed it like a fool. *Shak. As you like it.*—

Nor thought, when she beheld the fight from far,
Her beauty was th' *occasion* of the war. *Dryden.*

—Concerning ideas lodged in the memory, and upon *occasion* revived by the mind, it takes notice of them as of a former impression. *Locke.* 4. Reason not cogent, but opportune.—

Your business calls on you,
And you embrace th' *occasion* to depart. *Shak.*

5. Incidental need; casual exigence.—

Never master had
A page so kind, so duteous, diligent,
So tender over his *occasions*. *Shak. Cymbel.*

Antony will use his affection where it is:
He married but his *occasion* here. *Shak.*

—My *occasions* have found time to use them toward a supply of money. *Shak. Timon of Athens.*—They who are desirous of a name in painting, should read with diligence, and make their observations of such things as they find for their purpose, and of which they may have *occasion*. *Dryden's Dufresnoy.*—Syllogism is made use of on *occasion* to discover a fallacy hid in a rhetorical flourish. *Locke.*—The ancient canons were very well fitted for the *occasion* of the church in its purer ages. *Baker on Learning.*—God hath put us into an imperfect state, where we have perpetual *occasion* of each other's assistance. *Swift.*—

A prudent chief not always must display
His pow'rs in equal ranks and fair array,
But with th' *occasion* and the place comply,
Conceal his force, nay, seem sometimes to fly.
Pope.

* *To* OCCASION. *v. a.* [*occasionner*, Fr. from the noun.] 1. To cause casually.—Who can find it reasonable that the soul should, in its retirement, during sleep, never light on any of those ideas it borrowed not from sensation, preserve the memory of no ideas but such, which being *occasioned* from the body, must needs be less natural to a spirit? *Locke.*—The good Psalmist condemns the foolish thoughts, which a reflection on the prosperous state of his affairs had sometimes *occasioned* in him. *Atterbury.* 2. To cause; to produce.—I doubt not, whether the great encrease of that disease may not have been *occasioned* by the custom of much wine introduced into our common tables. *Temple.*—A consumption may be occasioned by running sores, or sinous fistulas. *Blackmore.*—By its styptic quality, it affects the nerves, very often *occasioning* tremors. *Arbuthnot on Aliments.* 3. To influence.—If we enquire what it is that *occasions* men to make several combinations of simple ideas into distinct modes, and neglect others which have as much an aptness to be combined, we shall find the reason to be the end of language. *Locke.*

* OCCASIONAL. *adj.* [*occasionel*, Fr. from *occasion.*] 1. Incidental; casual.—Thus much is sufficient out of scripture, to verify our explication of the deluge, according to the Mosaical history of the flood, and according to many *occasional* reflections dispersed in other places of scripture concerning it. *Burnet.* 2. Producing by accident.—The ground or *occasional* original hereof, was the amazement and sudden silence the unexpected appearance of wolves does often put upon travellers. *Brown's Vulgar Errours.* 3. Produced by occasion or incidental exigence.—There are likewise *occasional* times for the performance of this duty. *Duty of Man.*—

Those letters were not writ to all;
Nor first intended but *occasional*. *Dryden.*

* OCCA-

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* OCCASIONALLY. *adv.* [from *occasional.*] According to incidental exigence; incidentally.—

Authority and reason on her wait,
As one intended first, not after made
Occasionally. *Milt. Par. Lost.*

—I have endeavoured to interweave with the assertions some of the proofs whereon they depend, and *occasionally* scatter several of the more important observations throughout the work. *Woodward's Nat. Hist.*

* OCCASIONER. *n. s.* [from *occasion.*] One that causes or promotes by design or accident.—Her new greatness did no way comfort her in respect of her brother's loss, whom she studied all means possible to revenge upon every one of the *occasioners*. *Sidney.*—Some men will load me as if I were a wilful and resolved *occasioner* of my own and my subjects miseries. *K. Charles.*—In case a man dig a pit and leave it open, whereby it happeneth his neighbour's beast to fall therein to and perish, the owner of the pit is to make it good, in as much as he was the *occasioner* of that loss to his neighbour. *Sanderson.*

* OCCECATION. *n. s.* [*occæcatio*, from *occæco*, Lat.] The act of blinding or making blind.—Those places speak of obduration and *occecation*, so as if the blindness that is in the minds, and hardness that is in the hearts of wicked men, were from God. *Sanderson.*

(1.) * OCCIDENT. *n. s.* [from *occidens*, Latin.] The west.—

The envious clouds are bent
To dim his glory, and to stain the tract
Of his bright passage to the *occident.* *Shak.*

(2.) OCCIDENT, in geography, is the westward quarter of the horizon; or that part of the horizon where the ecliptic, or the sun therein, descends into the lower hemisphere; in contradistinction to *orient.*

* OCCIDENTAL. *adj.* [*occidentalis*, Latin.] Western.—

Ere twice in murk and *occidental* damp,
Moist Hesperus hath quench'd his sleepy lamp.
Shak.

—If she had not been drained, she might have tiled her palaces with *occidental* gold and silver. *Howel.*—East and west have been the obvious conceptions of philosophers, magnifying the condition of India above the setting and *occidental* climates. *Brown's Vulg. Err.*

* OCCIDUOUS. *adj.* [*occiduus*, Latin.] Western.

* OCCIPITAL. *adj.* [*occipitalis*, Lat.] Placed in the hinder part of the head.

(1.) * OCCIPUT. *n. s.* [Latin.] The hinder part of the head.—

His broad-brim'd hat
Hangs o'er his *occiput* most quaintly,
To make the knave appear more saintly.
Butler.

(2.) OCCIPUT. See ANATOMY, § 125.

* OCCISION. *n. s.* [from *occisio*, Lat.] The act of killing.

* *To* OCCLUDE. *v. a.* [*occludo*, Latin.] To shut up.—They take it up, and roll it upon the earthis, whereby, *occluding* the pores, they conserve the natural humidity. *Brown.*

* OCCLUSE. *adj.* [*occlusus*, Latin.] Shut up; closed.—The appulse is either plenary and *occluse*, so as to preclude all passages of breath or voice through the mouth; or else partial and pervious, so as to give them some passages out of the mouth. *Holder on Speech.*

* OCCLUSION. *n. s.* [from *occlusio*, Latin.] The act of shutting up.

(1.) OCCOA, a river of Hispaniola, which runs into the sea, and forms

(2.) OCCOA Bay, on the SE. coast.

OCCONEE Mountains, mountains of Georgia, in the NE. part of the state. Lon. 83. 40. W. Lat. 34. 50. N.

(1.) * OCCULT. *adj.* [*occulte*, Fr. *occultus*, Lat.] Secret; hidden; unknown; undiscoverable.

If his *occult* guilt
Do not itself unkennel in one speech,
It is a damned ghost that we have seen.
Shak.

—Our tongues will run divisions in a tune not miffing a note, even when our thoughts are totally engaged elsewhere; which effects are to be attributed to some secret act of the soul, which to us is utterly *occult.* *Glanville.*—These instincts we call *occult* qualities; which is all one with saying that we do not understand how they work. *L'Estr.*—These are manifest qualities, and their causes only are *occult.* And the Aristotelians give the name of *occult* qualities, not to manifest qualities, but to such qualities only as they supposed to lie hid in bodies, and to be the unknown causes of manifest effects. *Newton's Opticks.*

(2.) OCCULT, in geometry, is used for a line that is scarce perceivable, drawn with the point of the compasses or a leaden pencil. These lines are used in several operations, as the raising of plans, designs of building, pieces of perspective, &c. They are to be effaced when the work is finished.

(3.) OCCULT QUALITIES, in philosophy, were those qualities of body or spirit which baffled the investigation of philosophers, and for which they were unable to give any reason.

(4.) OCCULT SCIENCE, the magic, necromancy, cabbala, &c. now exploded.

* OCCULTATION. *n. s.* [*occultatio*, Latin.] In astronomy, is the time that a star or planet is hid from our sight, when eclipsed by interposition of the body of the moon, or some other planet between it and us. *Harris.*

* OCCULTNESS. *n. s.* [from *occult.*] Secretness; state of being hid.

(1.) * OCCUPANCY. *n. s.* [from *occupans*, Latin.] The act of taking possession.—Of moveables, some are things natural, others, things artificial. Property in the first is gained by *occupancy*, in the latter by improvement. *Warburton on Literary Property.*

(2.) OCCUPANCY, in law, is the taking possession of those things which before belonged to nobody. This (says Judge Blackstone) is the true ground and foundation of all PROPERTY, or holding those things in severalty, which, by the law of nature, unqualified by that of society, were common to all mankind. But when once it was agreed that every thing capable of ownership should have an owner, reason suggested, that he who could first declare his intention of appropriating any thing to his own use, and, in consequence of such

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such his intention, actually took it into poſſeſſion, ſhould thereby gain the abſolute property of it; according to that rule of the law of nations, recognized by the laws of Rome, *Quod nullius eſt, id ratione naturali occupanti conceditur.* This right of occupancy, ſo far as it concerns real property, hath been confined by the laws of England within a very narrow compaſs; and was extended only to a ſingle inſtance; namely, where a man was tenant *pour autre vie*, or had an eſtate granted to *himſelf* only for the life of another man, and died during the life of *ceſtuy que vie*, or him by whoſe life it was holden: in this caſe, he that could firſt enter on the land, might lawfully retain the poſſeſſion ſo long as *ceſtuy que vie* lived by right of occupancy. This ſeems to have been recurring to firſt principles, and calling in the law of nature to aſcertain the property of the land, when left without a legal owner. For it did not revert to the grantor, who had parted with all his intereſt, ſo long as *ceſtuy que vie* lived; it did not eſcheat to the lord of the fee; for all eſcheats muſt be of the abſolute entire fee, and not of any particular eſtate carved out of it, much leſs of ſo minute a remnant as this: it did not belong to the grantee; for he was dead; it did not deſcend to his heirs; for there were no words of inheritance in the grant: nor could it veſt in his executors; for no executors could ſucceed to a freehold. Belonging therefore to nobody, like the *hæreditas jacens* of the Romans, the law left it open to be ſeized and appropriated by the firſt perſon that could enter upon it, during the life of *ceſtuy que vie*, under the name of an *occupant*. But there was no right of occupancy allowed where the king had the reverſion of the lands: for the reverſioner hath an equal right with any other man to enter upon the vacant poſſeſſion; and where the king's title and a ſubject's interfere, the king's ſhall always be preferred. Againſt the king therefore there could be no prior occupant, becauſe *nullum tempus occurrit regi*. And, even in the caſe of a ſubject, had the eſtate *pour autre vie* been granted to a man *and his heirs* during the life of *ceſtuy que vie*, there the heir might, and ſtill may, enter and hold poſſeſſion, and is called in law a *ſpecial occupant*; as having a ſpecial excluſive right, by the terms of the orginal grant, to enter upon and occupy this *hæreditas jacens*, during the reſidue of the eſtate granted; though ſome have thought that ſuch eſtate is rather a deſcendible freehold. But the title of *common occupancy* is now reduced almoſt to nothing by two ſtatutes; the one, 29 Car. II. c. 3. which enacts, that where there is no ſpecial occupant, in whom the eſtate may veſt, the tenant *pour autre vie* may deviſe it by will, or it ſhall go to the executors, and be aſſets in their hands for payment of debts: the other that of 14 Geo. II. c. 20. which enacts, that it ſhall veſt not only in the executors, but, in caſe the tenant dies inteſtate, in the adminiſtrators alſo; and go in courſe of a diſtribution like a chattel intereſt. By theſe two ſtatutes the title of *common occupancy* is utterly extinct and aboliſhed: though that of *ſpecial occupancy*, by the heir at law, continues to this day; ſuch heir being held to ſucceed to the anceſtors eſtate, not by deſcent, for then he muſt take an eſtate of inheritance, but as an occupant, ſpecially marked out and appointed by the original grant. For the ſtatutes muſt not be conſtrued ſo as to create any new eſtate, or to keep that alive which by the common law was determined, and thereby to defeat the granter's reverſion; but merely to diſpoſe of an intereſt in being, to which by law there was no owner, and which therefore was left open to the firſt occupant. When there is a reſidue left, the ſtatutes give it to the executors, &c. inſtead of the firſt occupant; but they will not create a reſidue on purpoſe to give it to the executors. The only mean to provide an *appointed* inſtead of a *caſual*, a *certain* inſtead of an *uncertain, owner*, of lands which before were nobody's; and thereby to ſupply this *caſus omiſſus*, and render the diſpoſition of the law in all reſpects entirely uniform: this being the only inſtance wherein a title to a real eſtate could ever be acquired by occupancy. In the caſe of a ſole coporation, as a parſon of a church, when he dies or reſigns, though there be no *actual* owner of the land till a ſucceſſor be appointed, yet there is a *legal potential* ownerſhip, ſubſiſting in contemplation of law; and when the ſucceſſor is appointed, his appointment ſhall have a retroſpect and relation backwards, ſo as to entitle him to all the profits from the inſtant that the vacancy commenced. And, in all other inſtances, when the tenant dies inteſtate, and no other owner of the lands is to be found in the common courſe of deſcents, there the law veſts an ownerſhip in the king, or in the ſubordinate lord of the fee, by eſcheat. So alſo, in ſome caſes, where the laws of other nations give a right by occupancy, as in lands newly created, by the riſing of an iſland in a river, or by the alluvion or dereliction of the ſea; in theſe inſtances, the law of England aſſigns them an immediate owner. For Bracton tells us, that if an iſland ariſe in the *middle* of a RIVER, it belongs in common to thoſe who have lands on each ſide thereof; but if it be nearer to one bank than the other, it belongs only to him who is proprietor of the neareſt ſhore; which is agreeable to the civil law. Yet this ſeems only to be reaſonable, where the ſoil of the river is equally divided between the owners of the oppoſite ſhores; for if the whole ſoil is the freehold of any one, as it muſt be whenever a ſeveral fiſhery is claimed, there it ſeems juſt (and ſo is the practice) that the iſlets, ariſing in any part of the river, ſhall be the property of him who owneth the piſcary and the ſoil. However, in caſe a new iſland riſe in the *ſea*, though the civil law gives it to the firſt occupant, yet our's gives it to the king. And as to lands gained from the ſea, either by *alluvion*, by the waſhing up of ſand and earth, ſo as in time to make *terra firma*; or by *dereliction*, as when the ſea ſhrinks back below the uſual water-mark; in theſe caſes the law is held to be, that if this gain be by little and little, by ſmall and imperceptible degrees, it ſhall go to the owner of the land adjoining. For *de minimis non curat lex*: and, beſides, theſe owners being often loſers by the breaking in of the ſea, or at charges to keep it out, this poſſible gain is therefore a reciprocal conſideration for ſuch poſſible charge or loſs. But if the alluvion or dereliction be ſudden and conſiderable, in this caſe it belongs to the king; for, as the king

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is lord of the sea, and so owner of the soil while it is covered with water, it is but reasonable he should have the soil when the water has left it dry. So that the quantity of ground gained, and the time during which it is gained, are what make it either the king's or the subject's property. In the same manner, if a river, running between two lordships, by degrees gains upon one, and thereby leaves the other dry; the owner who loses his ground thus imperceptibly has no remedy: but if the course of the river be changed by a sudden and violent flood, or other hasty means, and thereby a man loses his ground, he shall have what the river has left in any other place as a recompense for this sudden loss. And this law of alluvions and derelictions, with regard to *rivers*, is nearly the same in the imperial law; from whence indeed those our determinations seem to have been drawn and adopted: but we ourselves, as islanders, have applied them to *marine* increases, and have given our sovereign the prerogative he enjoys, as well upon the particular reasons beforementioned, as upon this other general ground of prerogative, formerly remarked, that whatever hath no other owner is vested by the law in the king. See PREROGATIVE.

(1.) * OCCUPANT. *n. s.* [*occupans*, Latin.] He that takes possession of any thing.—Of beasts and birds the property passeth with the possession, and goeth to the *occupant*; but of civil people not so. *Bacon.*

(2.) OCCUPANT. See OCCUPANCY.

* *To* OCCUPATE. *v. a.* [*occupo*. Latin.] To possess; to hold; to take up.—Drunken men are taken with a plain destitution in voluntary motion; for that the spirits of the wine oppress the spirits of the animal, and *occupate* part of the place where they are, and so make them weak to move. *Bacon's Nat. Hist.*

(1.) * OCCUPATION. *n. s.* [from *occupation*, Fr. *occupatio*, Lat.] 1. The act of taking possession.—Spain hath enlarged the bounds of its crown within this last sixscore years much more than the Ottomans: I speak not of matches or unions, but of arms, *occupations*, invasions. *Bacon.* 2. Employment; business.—Such were the distresses of the then infant world; so incessant their *occupations* about provision for food, that there was little leisure to commit any thing to writing. *Woodward.*—In your most busy *occupations*, when you are never so much taken up with other affairs, yet now and then send up an ejaculation to the God of your salvation. *Wake.* 3. Trade; calling; vocation.—

The red pestilence strikes all trades in Rome,
And *occupations* perish. *Shak. Coriolanus.*

—By their *occupation* they were tent-makers. *Acts.*

(2.) OCCUPATION, in a legal sense, is taken for use or tenure: as in deeds it is said that such lands are or were in the occupation of such a person.

(1.) * OCCUPIER. *n. s.* [from *occupy*.] 1. A possessor; one who takes into his possession.—If the title of *occupiers* be good in a land unpeopled, why should it be bad accounted in a country peopled thinly? *Ral.* 2. One who follows any employment.—Thy merchandise, and the *occupiers* of thy merchandise, shall fall into the midst of the seas. *Ezek.* xxvii. 27.

(2.) OCCUPIERS OF WALLING, a term used in the salt works for the persons who are the sworn officers that allot in particular places what quantity of salt is to be made, that the markets may not be overstocked, and see that all is carried fairly and equally between the lord and the tenant.

(1.) * *To* OCCUPY. *v. a.* [*occuper*. Fr. *occupo*, Lat.] 1. To possess; to keep; to take up.—How shall he that *occupieth* the room of the unlearned say Amen at thy giving of thanks? 1 *Cor.* xiv. 16.—Powder being suddenly fired altogether, upon this high rarefaction requireth a greater space than before its body *occupied*. *Brown's Vulg. Err.*—He must assert infinite generations before that first deluge; and then the earth could not receive them, but the infinite bodies of men must *occupy* an infinite space. *Bentley.* 2. To busy; to employ.—An archbishop may have cause to *occupy* more chaplains than six. *Ab of H.* VIII.—They *occupied* themselves about the sabbath. 2 *Mac.* viii 27.—How can he get wisdom that driveth oxen, and is *occupied* in their labours? *Eccluf.* xxxviii. 25. 3. To follow as business.—They *occupy* their business in deep waters. *Comm. Prayer*.—Mariners were in thee to *occupy* thy merchandise. *Ezek.* xxvii. 9. 4. To use; to expend.—All the gold *occupied* for the work was twenty and nine talents. *Exodus* xxxviii. 24.

(2.) * *To* OCCUPY. *v. n.* To follow business.—He called his ten servants, and delivered them ten pounds, and said unto them, *Occupy* till I come. *Luke* xix. 13.

* *To* OCCUR. *v. n.* [*occurro*. Latin.] 1. To be presented to the memory or attention.—There doth not *occur* to me any use of this experiment for profit. *Bacon's Nat. Hist.*—The mind should be always ready to turn itself to the variety of objects that *occur*. *Locke.*—The far greater part of the examples that *occur* to us, are so many encouragements to vice and disobedience. *Rogers.* 2. To appear here and there.—In Scripture though the word heir *occur*, yet there is no such thing as it in our author's sense. *Locke.* 3. To clash; to strike against; to meet.—Bodies have a determinate motion, according to the degrees of their external impulse, their inward principle of gravitation, and the resistance of the bodies they *occur* with. *Bentley.* 4. To obviate; to intercept; to make opposition to. A Latinism.—Before I begin that, I must *occur* to one specious objection against this proposition. *Bentley.*

* OCCURRENCE. *n. s.* [*occurrence*, Fr. from *occur*; this was perhaps originally *occurrents*.] 1. Incident; accidental event.—In education most time is to be bestowed on that which is of the greatest consequence, in the ordinary course and *occurrences* of that life the young man is designed for. *Locke.* 2. Occasional presentation.—Voyages detain the mind by the perpetual *occurrence* and expectation of something new. *Watts.*

* OCCURRENT. *n. s.* [*occurrent*, Fr. *occurrens*, Lat.] Incident; any thing that happens.—Such as study how to work upon all *occurrents*, with most advantage in private. *Hooker*.—He did himself certify all the news and *occurrents* in every particular. *Bacon's Henry* VII.

* OCCURSION *n. s.* [*occurfus*, Latin.] Clash; mutual blow.—In the resolution of bodies by fire, some of the dissipated parts may, by their various

occurfion

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occurſion occaſioned by the heat, ſtick cloſely. *Boyle.*—Now ſhould thoſe active particles, ever and anon juſtled by the *occurſion* of other bodies, ſo orderly keep their cells without alteration of ſite. *Glanville's Sceptis.*

OCDA, a town of Perſia, in Irac Agemi.

(I.) * OCEAN. *n. ſ.* [*ocean*, Fr. *oceanus*, Latin.] 1. The main; the great ſea.—

The golden ſun ſalutes the morn,
And, having gilt the *ocean* with his beams,
Gallops the zodiack. *Shak. Tit. Andron.*

Will all great Neptune's *ocean* waſh this blood
Clean from my hand? *Shak. Macb.*

2. Any immenſe expanſe.—Time in general, is to duration, as place to expanſion. They are ſo much of thoſe boundleſs *oceans* of eternity and immenſity, as is ſet out and diſtinguiſhed from the reſt, to denote the poſition of finite real beings, in thoſe uniform, infinite *oceans* of duration and ſpace. *Locke.*

(II.) * OCEAN. *adj.* [This is not uſual, though conformable to the original import of the word.] Pertaining to the main or great ſea.—

Leviathan, which God of all his works
Created hugeſt that ſwim th' *ocean* ſtream. *Milt.*
Bounds were ſet
To darkneſs, ſuch as bound the *ocean* wave. *Milt.*

(III.) *The* OCEAN (§ I. *def.* 1.) is that huge maſs of ſalt waters which encompaſſes all parts of the globe, and by means of which, in the preſent improved ſtate of navigation, an eaſy intercourſe ſubſiſts between places the moſt diſtant. The ocean is diſtinguiſhed into three grand diviſions, of which the other ſeas or *oceans* are only parts or branches:

1. OCEAN, THE ATLANTIC, that which divides Europe and Africa from America, is generally about 3000 miles wide. See ATLANTIC.

2. OCEAN, THE INDIAN, ſeparates the Eaſt Indies from Africa, and is 3000 miles over.

3. OCEAN, THE PACIFIC, or SOUTH SEA, that which divides America from Aſia, is generally about 10,000 miles over. See PACIFIC.

(IV.) OCEAN, SALTNESS, TIDES, &c. OF THE. See SEA, TIDES, &c.

* OCEANICK. *adj.* [from *ocean*.] Pertaining to the ocean. *Dict.*

OCEANIDES, or OCEANITIDES, in the mythology, ſea-nymphs, daughters of Oceanus and the goddeſs TETHYS. They were 3000 according to Apollodorus, who mentions the names of ſeven of them: Aſia, Styx, Electra, Doris, Eurynome, Amphitrite, and Metis. Heſiod ſpeaks of the eldeſt of them, of whom he reckons 41: Pitho, Admete, Prynno, Ianthe, Rhodia, Hippo, Callirrhoe, Urania, Clymene, Idyia, Paſithoe, Clythia, Zeuxo, Galuxaure, Plexaure, Perſeis, Piſuto, Thoe, Polydora, Melobofis, Dione, Cereeis, Xanthe, Acaſta, Ianira, Teleſtho, Europa, Meneſtho, Petrea, Eudora, Calypſo, Tyche, Ocyroe, Criſia, Amphiro, with thoſe mentioned by Apollodorus; except Amphitrite. Hyginus mentions 16 whoſe names are almoſt all different from thoſe of Apollodorus and Heſiod; owing to the mutilation of the original text. The Oceanides, like the reſt of the inferior deities, were honoured with libations and ſacrifices. Prayers were offered to them, and they were intreated to protect ſailors from ſtorms and dangerous tempeſts. The Argonauts, before they proceeded to their expedition, made an offering of flour, honey, and oil, on the ſea-ſhore, to all the deities of the ſea; ſacrificed bulls to them, and intreated their protection. When the ſacrifice was made on the ſea-ſhore, the blood of the victim was received in a veſſel; but when it was in open ſea, they permitted the blood to run down into the waters. When the ſea was calm, they generally offered a lamb or a young pig; but if it was agitated by the winds, and rough, a black bull was deemed the moſt acceptable victim.

OCEANUS, in Pagan mythology, the ſon of Cœlus and Terra, the huſband of TETHYS, and the father of the OCEANIDES. The ancients called him the *Father of all things*, imagining that he was produced by Humidity, which, according to Thales, was the firſt principle from which every thing was produced. Homer repreſents Juno viſiting him at the remoteſt limits of the earth, and acknowledging him and Tethys as the parents of the gods. He was repreſented with a bull's head, as an emblem of the rage and bellowing of the ocean when agitated by a ſtorm. According to Homer, he was the father of all the gods, and on that account he received frequent viſits from them. He is often, indeed almoſt always, repreſented as an old man with a long flowing beard, ſitting upon the waves of the ſea. He often holds a pike in his hand, while ſhips under ſail appear at a diſtance, or a ſea monſter ſtands near him. Oceanus preſided over every part of the ſea, and even the rivers were ſubjected to his power. The ancients were ſuperſtitious in their worſhip of him, and revered with great ſolemnity a deity to whoſe care they entruſted themſelves when going on any voyage.

OCELA, a woman who preſided over the rites of Veſta for 57 years with the greateſt ſanctity. She died in the reign of Tiberius, and the daughter of Domitius ſucceeded her.

* OCELLATED. *adj.* [*ocellatus*, Lat.] Reſembling the eye.—The white butterfly lays its offſpring on cabbage leaves; a very beautiful reddiſh *ocellated* one. *Derham's Phyſico Theol.*

OCELLUS LUCANUS, or the LUCANIAN, an ancient Pythagorean philoſopher, who lived before Plato. His work Περὶ τῦ παντὸς, or *The Univerſe*, is the only piece of his which is come down entire to us; and was written originally in the Doric dialect, but was tranſlated by another hand into the Attic. William Chriſtian, and after him Lewis Nogarola, tranſlated this work into Latin; and there are ſeveral editions of it, both in Greek and Latin. A fragment is alſo extant of his work on Laws, which is praiſed by Plato.

OCELOT. See FELIS, N° XXIII.

OCELOXOCHTIL, or TIGER-FLOWER, in botany, a large Mexican plant, compoſed of three pointed petals, red, but towards the middle of a mixed white and yellow, repreſenting in ſome degree the ſpots of that wild animal from which it takes its name. The plant has leaves alſo reſembling thoſe of the iris, and a bulbous root. See *Plate* CCXLVI.

OCHAM. See NOMINAL, § 2; and OCKHAM.

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OCHAN, a town of Ruſſia, in Perm.

OCHIL HILLS, a ridge of lofty mountains of Scotland, which begin in the pariſh of Dumblane in Perthſhire, and extend many miles eaſtward into Fife. They are moſtly green to the top, and afford excellent paſture for ſheep and black cattle. Bencleugh, the higheſt of them, is 2,420 feet above the ſea level, and affords an extenſive proſpect of rural ſcenery. Theſe hills abound with various metals, agates, rock cryſtals, and other minerals. In thoſe parts of them, which lie in the pariſhes of Alva, Logie, Dollar, and Tillicoultry, veins of copper and lead have been wrought to a conſiderable extent. The copper ore is very rich, and is generally found incloſed in a matrix of SULPHAT OF BARYTES. About 1715, Sir John Erſkine of Alva, aſſiſted by ſome miners from Leadhills, diſcovered a very rich vein of ſilver, which yielded 12 ounces of ſilver from 14 oz. of ore; and for 14 weeks produced ore to the value of 4000l. per week; ſo that Sir John drew about 50,000l. from it in that ſhort period. The vein, however, at laſt failed, and no farther ſearch has been ſince made. Excellent cobalt has alſo been found on theſe hills; as well as iron and arſenic: and extenſive coal mines have lately been begun to be wrought at the foot of them.

(1.) OCHILTREE, a pariſh of Scotland, in Ayrſhire, in the diſtrict of Kyle; 6 miles long from N. to S. and 5 broad. The ſurface is pretty level, with a few gentle hillocks; the ſoil is a ſtrong but fertile clay, producing good crops of oats and barley. There is one coal pit and ſome marl. The population in 1792, was 1150; decreaſe 60 ſince 1755. The pariſh is watered by the Coyl and the Luggar.

(2.) OCHILTREE, a village in the above pariſh, containing in 1791, 67 families, and 268 ſouls. It is ſeated on the S. bank of the Luggar, 11 miles E. of Ayr, on the road to Dumfries. The church was built in 1789, and the ſchool is flouriſhing.

* OCHIMY. *n. ſ.* [formed by a corruption from *alchimy*.] A mixed baſe metal.

OCHINUS, Bernardin, a celebrated Italian, born at Seine in 1487, and at firſt a Cordelier. He then changed to the ſtudy of phyſic, and acquired the eſteem of cardinal Julius de Medicis, afterwards Pope Clement VII. But once more changing his mind, he reſumed his monk's habit, and aiming at ſtill higher perfection, he, in 1534, joined the reformed ſect of the Capuchins. He practiſed, with a moſt rigorous exactneſs, all the rules of the order; which he contributed ſo much to improve, that ſome have called him the *founder* of it. He was made vicar-general, and became highly eminent for his pulpit eloquence. Pope Paul III. on account of his extraordinary merit, made him his father confeſſor and preacher. He was thus the darling both of pope and people; when, falling in with one John Valde a Spaniard, who had imbibed Luther's doctrine, he became a proſelyte. He was then at Naples, and began to preach in favour of Proteſtantiſm; on which he was ſummoned to appear at Rome; and in his way thither met at Florence with Peter Martyr, who perſuaded him not to put himſelf into the Pope's power: and they both agreed to withdraw to ſome place of ſafety. Ochinus went firſt to Ferrara, where he diſguiſed himſelf as a ſoldier; and proceeding thence to Geneva, arrived there in 1542, and married a woman of Lucca. He then went to Augſburg, where he publiſhed ſome ſermons. In 1547, he was invited, together with Peter Martyr, into England, by Abp. Cranmer, to aſſiſt in carrying on the reformation. They arrived in December at Lambeth, were kindly received by Cranmer, and were made prebendaries of Canterbury. Ochinus laboured heartily in the reformation; and his dialogue upon the uſurped primacy of the biſhop of Rome was tranſlated into Latin by Ponet biſhop of Wincheſter, and publiſhed in 1549. But upon the death of Edward VI. being forced to leave England, they both retired to Straſburg in 1553. From this city Ochinus went to Baſil, and was invited thence in 1555 to Zurich, to be miniſter of an Italian church, which conſiſted of ſome refugees from Locarno. Ochinus ſubſcribed the articles of faith agreed upon by the church of Zurich, and met in that city with Bullinger, who proved a very good friend to him. He governed this Italian church till 1563, when he was baniſhed thence by the magiſtrates for publiſhing ſome dialogues, wherein he defended the doctrine of polygamy. From Zurich he went to Baſil; but not being ſuffered to ſtay there, he fled in great diſtreſs into Moravia, where he fell in with the Socinians, and joined them. Staniſlaus Lubienitſki, the great patron of this ſect, gives the following account of his laſt days in his *Hiſt. Reformat. Polon.* Ochinus, ſays he, retired into Moravia, and Poland, and even there he was not out of the reach of Calvin's letters.' He returned into Moravia after king Sigiſmund's edict; who, in 1564, baniſhed all *Tritheiſts*, *Atheiſts*, &c. During his travels, he fell ſick of the plague at Pinckſow, and received there all poſſible kindneſs from one of the brethren, named *Philippovius*. His daughter and two ſons, who were with him, died of the plague; but he had buried his wife before he left Zurich. He continued his journey to Moravia, and within 3 weeks died at Slakow, in 1564, aged 77. His writings are numerous.

OCHLOCRACY. *n. ſ.* that form of government wherein the populace have the chief adminiſtration of affairs.

OCHNA, in botany, a genus of the monogynia order, belonging to the polyandria claſs of plants; and in the natural method ranking with thoſe of which the order is doubtful. The corolla is pentapetalous; the calyx pentaphillous; the berries monoſpermous, and affixed to a large roundiſh receptacle.

OCHOCKOI, a gulf of Kamſchatka.

OCHO RIOS, a bay on the N. coaſt of Jamaica. Lon. 76. 56. W. Lat. 18. 26. N.

OCHOTA, a river of Ruſſia, which runs into the ſea at Ochotſk.

(1.) OCHOTSK, a province of Ruſſia, in the government of Irkutſk.

(2.) OCHOTSK, a ſea port in the above province, at the mouth of the Ochota, which has a trade with Yakutſk and Kamſchatka: 1320 miles NE. of Irkutſk. Lon. 160. 30. E. Ferro. Lat. 59. 28. N.

(1.) *OCHRE. *n. ſ.* [*ochre*, *ocre*, French; ὠχρα.] The

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The earths distinguished by the name of *ochres* are those which have rough or naturally dusty surfaces, are but slightly coherent in their texture, and are composed of fine and soft argillaceous particles, and are readily diffusible in water. They are of various colours; such as red, yellow, blue, green, black. The yellow sort are called *ochres* of iron, and the blue *ochres* of copper. *Hill.*

(2.) OCHRE. See MINERALOGY, *Part* II. *Chap.* VII. *Class* IV. *Ord.* V. *Gen.* III. *Sp.* 1: and *Ord.* VI. *Gen.* V. *Sp.* 2. *Var.* 4; and *Subsp.* 2. *Var.* 3.

(3.) OCHRE, LEAD. } See MINERALOGY,
(4.) OCHRE, NICKEL. } *Part* II. *Chap.* VII. *Ord.* VIII. and IX.; *Gen.* II. *Sp.* 1.

OCHREA. See BOOT, § 3.

* OCHREOUS. *adj.* [from *ochre.*] Consisting of ochre.—In the interstices of the flakes is a grey chalky, or *ochreous* matter. *Woodward.*

* OCHREY. *adj.* [from *ochre.*] Partaking of ochre.—This is conveyed about by the water; as we find in earthy, *ochrey*, and other loose matter. *Woodward.*

OCHROMA, in botany, a genus of the pentandria order, belonging to the monadelphia class of plants; and in the natural method ranking under the 37th order *Columniferæ*. The corolla consists of six petals, 3 external, and 3 internal; the antheræ unite, and form a spiral pillar round the style; the capsule is long, and has 5 loculaments, which contain a number of black round seeds. Of this there is only one species, viz.

OCHROMA LAGOPUS, the down-tree or cork-wood. This tree is frequent in Jamaica, is of speedy growth, and rises to about 25 or 30 feet. The flowers are large and yellow. The capsules are about 5 inches long, rounded, and covered with a thin skin; which when dry falls off in five longitudinal segments, and leaves the fruit greatly resembling a hare's foot. The down is short, soft, and silky: it is used sometimes to stuff beds and pillows; but, like other vegetable downs, is apt to get into clots. An insipid clear gum exudes from the tree when wounded. The bark is tough, and its fibres are in a reticulated form: it might be made into ropes. The dried wood is so very light and buoyant, as to be used by the fishermen in Jamaica for their nets instead of pieces of cork.

OCHSENBERG, a town of Wurtemberg, 12 miles W. of Heilbron.

OCHSENFURT, a town of Franconia, 8 miles SE. of Wurzburg, and 18 NNW of Anspach.

OCHSENHAUSEN, a town of Suabia, with a fine abbey, 14 miles S. of Ulm, and 40 WSW. of Augsburg.

OCHTEE, a river of Germany, which runs into the Weser, 8 miles below Bremen.

OCHTROP, a town of Germany, in the lately secularized bishopric of Munster; 21 miles NNW. of Munster.

(1.) OCHUS, a river of India or Bactriana.

(2.) OCHUS, a native of Cyzicus, who was killed by the Argonauts.

(3.) OCHUS, a prince of Persia, who refused to visit his native country for fear of giving all the women each a piece of gold.

(4.) OCHUS, a king of Persia, who exchanged this name for that of DARIUS NOTHUS. See DARIUS II. and PERSIA.

(5.) OCHUS, ARTAXERXES, another king of Persia. See ARTAXERXES III. He was cruel and avaricious; and to strengthen himself on his throne, he murdered all his brothers and sisters. His subjects revolted; but he reduced them, and added Egypt to his dominions. Bagoas, his favourite eunuch, poisoned him for the insults he had offered to Apis the god of the Egyptians; gave his flesh to be eaten by cats, and made handles for knives with his bones. It seems worthy of notice that most of those monsters who have disgraced humanity by their crimes, and sunk themselves below the level of brutes, have met with condign punishment; both in ancient or modern times.

OCIER, a town of Sardinia, 28 m. E. Saffari.

OCIVAS, a town of Brasil, in Marannon.

OCK, a river of England, in Berkshire, which runs into the Thames at Abingdon.

OCKEL, a river of Scotland, in Sutherland, which rises in the parish of Affint, and after running a long course, and separating the parishes of Criech and Kincardine for 10 m. falls into the Kyle.

OCKER, a river of Lower Saxony, which rises in the Black Forest, 8 miles SE. of Goslar, passes Wolfenbuttle, Brunswick, &c. and runs into the Allar, 5 miles W. of Gifhorn.

OCKHAM, OCCAM, or OCCHAM, William, a celebrated scholastic divine in the 14th century, of the order of Cordeliers. He was a native of England, and disciple to the famous Duns Scotus. He was head of the NOMINALISTS; and acquired so much celebrity, as to be denominated the *Invincible Doctor*. (See NOMINAL, § 2.) At the request of Michael de Cesena, general of his order, he became a party man with Lewis of Raviere, who was an avowed enemy of the church of Rome; and he wrote vigorously against pope John XXII. and his successors. Trithemius informs us, that he used to say to Lewis, "My Lord, let your sword defend me, and my pen shall be always ready to support you." He treated Charles and Clement in a book he wrote against them with gross scurrility. The consequence was an accusation against him and Cesena. They were charged with maintaining, that neither Christ nor his apostles had any possessions at all. This doctrine gave rise to that pleasant question, called the *bread of the Cordeliers*; whether the dominion of things consumed in the use, such as bread and wine, belonged to them, or only the simple use of them, without the dominion? Their rule not permitting them to have any thing as property, Pope Nicholas III. who had been of their order, devised a method to enrich them without breaking their rule. He made an ordinance, that they should have only the *usufruct* of the estates, and that the soil and fund of all such donations should belong to the Roman church. But on this account, Pope Nicholas's bull was revoked by John XXII. who condemned the use without the dominion, by his *Extravaganta ad Conditorem*. He also condemned, by another *Extravaganta cum inter*, the doctrine about the possession of estates by Christ and his apostles. Ockham and Cesena were

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were alſo excommunicated, becauſe they had departed from Avignon without the pope's licence, and had written againſt him. Ockham, however, was abſolved before he died, which was about 1347. Several pieces of his, written with conſiderable wit and ſubtility, are extant. The reformed church ſometimes make uſe of his reaſonings againſt the church of Rome Melchior Goldaſt printed, in his treatiſe upon monarchy, 413 queſtions of Ockham. His works are mentioned by many authors.

OCKLEY, Simon, a learned orientaliſt, born at Exeter in 1678, and educated at Queen's college, Cambridge, where he diſtinguiſhed himſelf by his intenſe application to literature. At the uſual time he took his degrees of A. M. and B. D. but marrying very young, was precluded from a fellowſhip in his college, which occaſioned his being afterwards involved in many difficulties. In 1705 he was preſented to the vicarage of Swavesey in Cambridgeſhire; and in 1711 he was choſen Arabic profeſſor of the univerſity. He was perfect maſter of the Arabic and other oriental tongues: the learned Reland ſaid of him, *Vir, ſi quis alius, harum literarum peritus.* Afterwards he had the misfortune to be confined in Cambridge caſtle for debt. The above preferments, notwithſtanding, he enjoyed till his death, Aug. 9. 1720. He wrote, 1. *Introductio ad Linguas Orientales.* 2. The hiſtory of the preſent Jews throughout the world; tranſlated from the Italian of Leo Modena, a Venetian rabbi. 3. The improvements of human reaſon, exhibited in the life of Hai Ebn Yokdhan, tranſlated from the Arabic. 4. An account of South-weſt Barbary, containing what is moſt remarkable in the kingdoms of Fez and Morocco; written by a perſon who had been a ſlave there a conſiderable time, and tranſlated from his MS. 5. The hiſtory of the Saracens, collected from the moſt authentic Arabic authors, in 2 vols 8vo. He was alſo well ſkilled in the French, Spaniſh, and Italian languages.

OCNUS, in fabulous hiſtory, the ſon of the prophetess MANTO, by the river Tiber, or rather by Tiberinus king of Alba. He aſſiſted Æneas againſt Turnus, and afterwards built MANTUA. *Virg. Æn.* x. 198.

OCOCINGO, a town of Mexico, in Chiapa.

OCOL, a town of Aſia, in Thibet.

OCOPA, a town of Peru, in Atun-Xauka.

OCRA, a viſcous vegetable ſubſtance well known in the Weſt Indies, where it is uſed to thicken ſoup, and for other purpoſes.

OCRICULUM, an ancient town of Italy, in Umbria, near Rome; now called OTRICOLI.

OCRIDA. See LOCHRIDA.

OCRISIA, in fabulous Roman hiſtory, the wife of Corniculus, one of the attendants of Tanaquil, the wife of Tarquinius I. As ſhe was throwing into the flames for offerings ſome of the meats that were ſerved on the table of Tarquin, ſhe ſuddenly ſaw in the fire what Ovid calls *objœni forma virilis.* She informed the queen of it; and when by her command ſhe had approached near it, ſhe conceived a ſon who was named Servius Tullius, and was educated in the king's family. He afterwards ſucceeded to the vacant throne. It was reported that Vulcan had aſſumed that form which Ocriſia ſaw, and was the father of the fifth king of Rome.

OCRZKA, a town of Poland, in Lublin.

OCTAEDRON. See OCTAHEDRON.

OCTAETERIS, a cycle or term of 8 years, in the Grecian chronology, at the concluſion of which three entire lunar months were added. This cycle was in uſe till Meton's invention of the golden number or cycle of 19 years.

(1.) * OCTAGON. *n. ſ.* [ὀκτὼ and γωνία.] In geometry, a figure conſiſting of eight ſides and angles; and this, when all the ſides and angles are equal, is called a regular *octagon*, which may be inſcribed in a circle. *Harris.*

(2.) OCTAGON, in fortification, denotes a place that has eight baſtions. See FORTIFICATION.

* OCTAGONAL. *adj.* [from *octagon.*] Having eight angles and ſides.

OCTAHEDRON, in geometry, one of the 5 regular bodies, conſiſting of 8 equal and equilateral triangles.

OCTANDRIA, [ὀκτὼ, *eight*, and ἀνὴρ, a man,] the 8th claſs in Linnæus's ſexual ſyſtem; conſiſting of plants with hermaphrodite flowers, which are furniſhed with 8 ſtamina, or male organs of generation. See BOTANY, *Index.*

* OCTANGULAR. *adj.* [*octo* and *angulus* Lat.] Having eight angles. *Dict.*

* OCTANGULARNESS. *n. ſ.* [from *octangular.*] The quality of having eight angles. *Dict.*

* OCTANT, OCTILE, *adj.* In aſtrology, is when a planet is in ſuch an aſpect or poſition with reſpect to another, that their places are only diſtant an eighth part of a circle or forty-five degrees. *Dict.*

OCTAPLA, in ſacred literature, denotes a polyglot bible, conſiſting of 8 columns, and as many different verſions of the ſacred text; viz. the original Hebrew both in Hebrew and Greek characters, Greek verſions, &c.

OCTATEUCH, the eight firſt books of the Old Teſtament.

(1.) * OCTAVE. *n. ſ.* [*octave*, Fr. *octavus*, Lat.] 1. The eighth day after ſome peculiar feſtival. 2. [In muſick.] An eighth or an interval of eight ſounds. 3. Eight days together after a feſtival. *Ainſ.*

(2.) OCTAVE, in muſic. See INTERVAL, § III. 3: and MUSIC, *Defin.* § 14, 17.

(1.) OCTAVIA, daughter of Caius Octavius, and ſiſter to Auguſtus Cæſar. She was one of the moſt illuſtrious ladies of ancient Rome; her virtues and her beauty were equally conſpicuous. She married Claudius Marcellus, and after his death M. Antony. Her marriage with Antony was a political match, to reconcile her brother and him together. Antony proved for ſome time attentive to her; but when he had ſeen Cleopatra, he neglected her; and when ſhe attempted to withdraw him from this illegal amour by going to meet him at Athens, ſhe was totally baniſhed from his preſence. This affront was highly reſented by her brother; and though Octavia endeavoured to pacify him by palliating Antony's behaviour, yet he reſolved to revenge her cauſe by arms. After the battle of Actium and the death of Antony, Octavia, forgetful of her own injuries, took into her houſe all the children of her

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her husband, and treated them with extraordinary tenderness. Marcellus, her son by her first husband, was married to a niece of Augustus, and openly intended as successor to his uncle. His sudden death plunged all the family into the greatest grief, and constantly preyed upon the mind of Octavia, who died of grief, about 11 years before the Christian era. Her brother paid great regard to her memory, and pronounced her funeral oration himself. The Roman people also showed their regard for her virtue, by wishing to pay her divine honours. Octavia had two daughters by Antony, Antonia Major and Antonia Minor. The elder married L. Domitius Ahenobarbus, by whom she had Cn. Domitius, who was the father of the Emperor Nero by Agrippina the daughter of Germanicus. Antonia Minor, who was as virtuous and as beautiful as her mother, married Drusus the son of Tiberius, by whom she had Germanicus and Claudius, who reigned before Nero.

(2.) Octavia, daughter of the Emperor Claudius by Messalina. She was betrothed to Silanus, but by the intrigues of Agrippina, she was married to the Emperor Nero in the 16th year of her age. She was soon after divorced under pretence of barrenness; and Nero married Poppæa, who exercised her enmity upon Octavia by procuring her to be banished into Campania. She was afterwards recalled by the people; but Poppæa, who was determined on her ruin, caused her again to be banished to an island, where she was ordered to kill herself by opening her veins. Her head was cut off and carried to Poppæa.

OCTAVIANUS, or } was nephew of Julius
OCTAVIUS Cæsar, } Cæsar the dictator, being the son of Accia his sister by Octavius a senator, and afterwards became the 2d emperor of Rome. He was born A. U. C. 691, during the consulship of Cicero. His uncle Julius Cæsar adopted him, and left him the greatest part of his fortune. When he was but 20 years of age, he was raised to the consulship. His youth and inexperience were ridiculed by his enemies; but his prudence and valour soon raised his consequence. He made war against his opponents on pretence of avenging the assassination of his uncle. He engaged in five civil wars with great success, viz. The wars of Mutina, Perusia, Philippi, Sicily, and Actium: the first and last of which were against M Antony; the 2d against L. Antony brother of the triumvir; the 3d against Brutus and Cassius; and the 4th against Sextus Pompey, son of Pompey the Great. He united his forces with Antony's at the battle of Philippi; and had he not been supported by the activity and bravery of his colleague, he would doubtless have been totally ruined in that engagement. In his triumvirate with Antony and Lepidus, he obtained the western parts of the Roman empire; and like his colleagues, to establish his power, proscribed his enemies and cut them off. The triumvirate lasted for 10 years. He had given his sister Octavia in marriage to Antony, to make their alliance more lasting; but when Cleopatra had charmed this unfortunate man, Octavia was repudiated. Augustus immediately took up arms professedly to avenge the wrongs of his sister; but perhaps chiefly to remove a rival whose power and abilities he dreaded and envied. Both parties met at Actium to decide the fate of Rome. Antony was supported by all the power of the east, and Augustus by Italy. Cleopatra fled from the battle with 60 ships, and her flight ruined Antony, who followed her into Egypt. The conqueror soon after went into Egypt, besieged Alexandria, and honoured with a magnificent funeral his unfortunate colleague and the celebrated queen, whom the fear of being led in the victor's triumph at Rome had driven to commit suicide. (See Rome.) After he had established peace all over the world, he shut the temple of Janus. A. U. C. 753. He was twice determined to lay down the supreme power immediately after the victory at Actium, and on account of his ill health; but his two faithful friends, Mecænas and Agrippa, dissuaded him, and contended, that if he did, he would leave it to be the prey of the most powerful, and expose himself to the greatest dangers. He died at Nola in the 76th year of his age, after he had held the sovereign power for 57 years. He was an active emperor, and consulted the good of the Romans. He visited all the provinces except Africa and Sardinia, and his consummate prudence and experience occasioned many salutary laws. He is, however, accused of licentiousness and adultery; but the fidelity of his friendship, and the many good qualities, which the poets whom he patronized have perhaps truly celebrated, made some, though in the eye of strict religion and true mortality but little, amends for his foibles. He distinguished himself by his learning; he was a complete master of the Greek language, and wrote some tragedies, besides the memoirs of his life and other works, which are now lost. He married four times; but was unhappy in all these connections; and his only daughter Julia disgraced herself and her father by her debaucheries. He recommended at his death his adopted son Tiberius as his successor. He left his fortune partly to him and to Drusus, and made donations to the army and Roman people. The title of Augustus was conferred upon him by the senate after the battle of Actium. (See Augustus, N° 1.)

* OCTAVO [Lat.] A book is said to be in *octavo* when a sheet is folded into eight leaves. *Dict.*—They accompany the second edition of the original experiments, which were printed first in English in *octavo* *Boyle*.

* OCTENNIAL. *adj.* [from *octennium*, Latin.] 1. Happening every eighth year. 2. Lasting eight years.

* OCTEVILLE, a town of France, in the department of the Lower Seine, 3 miles W. of Montervelliers.

OCTIDI, the eighth day of the French decade, a temporary institution already abolished. See Calendar, § 3.

(1.) OCTOBER. *n. s.* [*October*, Latin; *Octobre*, French.] The tenth month of the year, or the eighth numbered from March.—*October* is drawn in a garment of yellow and carnation; upon his head a garland of oak leaves, in his right hand the sign scorpio, in his left a basket of services. *Peacham*.

(2.) October, in chronology, was the eighth month

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month of Romulus's year, which the name implies; but the 10th in the kalendar of Numa, Julius Cæsar, &c. The senate gave this month the name *Faustinus*, in compliment to Faustina, the wife of the Emperor Antoninus; Commodus would have it called *Invictus*; and Domitian named it *Domitianus*; but in spite of all these attempts it still retains its original name. This month was sacred to Mars, and under his protection.

OCTOBRIS EQUUS, a horse annually sacrificed to Mars in October, because the horse is a warlike animal. A race was run with chariots drawn by two horses, previous to the sacrifices, and he that ran quickest was adjudged to be the victim.

OCTODURUS, an ancient town of Helvetia, now called MARTIGNY. Cæs. Com. i. 61.

* OCTOEDRICAL. *adj.* having eight sides. *Dict.*

* OCTOGENARY. *adj.* [*octogeni*, Latin.] Of eighty years of age. *Dict.*

OCTOGON. See OCTAGON.

OCTON, a town of France, in the department of the Herault, 4½ miles S. of Lodere.

* OCTONARY, *adj.* [*octonarius*, Latin.] Belonging to the number eight. *Dict.*

* OCTONOCULAR. *adj.* [*octo* and *oculus*.] Having eight eyes.—Most animals are binocular; spiders for the most part *octonocular*, and some senocular. *Derham.*

* OCTOPETALOUS. *adj.* [*octo* and πέταλον, Gr.] Having eight flower leaves. *Dict.*

* OCTOSTYLE. *n. f.* [*octo* and στύλος, Gr.] In the ancient architecture, is the face of a building or ordonnance containing eight columns. *Harris.*

* OCTUPLE. *adj.* [*octuplus*, Lat.] Eight fold. *Dict.*

* OCULAR. *adj.* [*oculaire*, French, from *oculus*, Latin.] Depending on the eye; known by the eye.—

Prove my love a whore!
Be sure of it; give me the *ocular* proof,
Or thou hadst better have been born a dog.
Shak.

—He that would not believe the menace of God at first, it may be doubted whether before an *ocular* example he believed the curse at first. *Brown.*

* OCULARLY. *adv.* [from *ocular*.] To the observation of the eye.—The same is *ocularly* confirmed by Vives upon Austin. *Brown.*

* OCULATE. *adj.* [*oculatus*, Latin.] Having eyes; knowing by the eye.

* OCULIST. *n. f.* [*oculus*, Lat.] One who professes to cure distempers of the eye.—If there be a speck in the eye, we take it off; but he were a strange *oculist* who would pull out the eye. *Bacon.* —I am no *oculist*; and if I should go to help one eye and put out the other, we should have an untoward business. *L'Estrange.*

(1.) OCULUS, the EYE, in anatomy. See ANATOMY, *Index.*

(2.) * OCULUS BELI. [Latin.]—The *oculus beli* of jewellers, probably of Pliny, is an accidental variety of the agat kind; having a grey horny ground, circular delineations, and a spot in the middle, resembling the eye; whence its name. *Woodward.*

(3.) OCULUS BELI, in Lithology, one of the semipellucid gems, of a greyish white colour, variegated with yellow and with a black central nucleus: it is of a roundish form, and its variegations very beautifully represent the pupil and iris of the eye: whence the name. It seems to be a species of OPAL. See § 4. and 5.

(4.) OCULUS CATI. See ASTERIA, N° 1; and MINERALOGY, *Part* II, *Chap.* IV, *Order* I, *Gen.* II, *Sp.* 4, *Var.* 3.

OCULUS MUNDI. See HYDROPHANES; LAPIS, N° 16; and MINERALOGY, *Part* II, *Chap.* IV, *Order* I, *Gen.* II, *Sp.* 4, *Var.* 2.

OCUNNOLUSTE, a town of Tennessee, 12 miles SSW. of Tellico.

OCYMOPHYLLON, in botany, a name given by Buxbaum to a new genus of plants, the characters of which are these: the flower is of the flosculous kind, having no petals; this stands upon the embryo fruit, which afterwards becomes an oblong quadrangular seed-vessel, divided into four cells, and containing roundish and very small seeds; its leaves are like those of the common ocymum or basil, whence its name; and its place of growth is in damp marshes. Boccone has described it under the improper name of *glaux*, calling it the *great green-flowered marsh glaux*.

OCYMUM, BASIL; a genus of the gymnospermia order, belonging to the didynamia class of plants; and in the natural method ranking under the 42d order, *Verticillatæ*. The upper lip of the calyx is orbiculated, the inferior one quadrifid; the corolla is resupinated, with one lip quadrifid, the other undivided; the exterior filament sends out a reflected process at the base. There are 8 species, all natives of warm climates, rising from six inches to two feet in height, and having a strong aromatic smell, resembling that of cloves. One species is used in the kitchen, particularly by the French cooks, who make great use of it in their soups and sauces. It rises about ten inches high, sending out branches by pairs opposite, from the bottom; the stalks and branches are four-cornered; the leaves are oval, spear-shaped, ending in acute points, and are indented on their edges; the whole plant is hairy, and has a strong scent of cloves, too powerful for most persons, but to some it is very agreeable. These plants are propagated by seeds, will thrive in this country in the open air, and will even ripen their seeds if placed in a stove or airy glass-case.

OCZAKOFF, or OCZAKOW, a town of Turkey in Europe, and capital of a sangiacate of the same name, inhabited by Tartars. It is called by the Turks *Dusin Crimenda*. During the late war it had a Turkish garrison of 20,000 men. However it was taken by the Russians in 1737, and all that resisted were put to the sword. The Russians themselves lost 18,000 men in the assault. The Turks returned the same year with 70,000 men to retake it; but were obliged to retire with the loss of 20,000. In 1738, the Russians withdrew their garrison, and demolished the fortifications. It is seated on the river Bog, near its junction with the Nieper, where the united streams fall into the Black Sea. It is 42 miles SW. of Bialagrod, 190 N. by E. of Constantinople, and 120 SE. of Bender. The river is here above

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above a mile broad. Hither the Turkiſh galleys retire which guard the mouth of the Nieper, to prevent the Coſſacks from pirating upon the Black Sea. It has no port, but good anchorage. It is defended by a caſtle, ſurrounded with walls 25 feet high; thoſe of the town are much lower. There are about 2000 people in Oczakow. Below the caſtle are two ſuburbs, ſituated on the declivity of a hill, which on the other ſide has nothing but precipices. To the ſouth of theſe is another ſmall caſtle, where there is ſome artillery to prevent veſſels coming up the river; alſo a tower, in which are always ſome Turks upon the watch to diſcover any of the Coſſacks at ſea, and give notice of them to the galleys by a ſignal. The city is inhabited by Tartars, though garriſoned by Turks. Lon. 30. 50. E. Lat. 46. 50. N.

OCZE, a town of Turkey, in Moldavia.

ODA, in the Turkiſh ſeraglio, ſignifies a claſs, order, or chamber. The grand ſignior's pages are divided into five claſſes or chambers. The firſt, which is the loweſt in dignity, is called the *great oda*, from the great number of perſons that compoſe it; theſe are the juniors, who are taught to read, write, and ſpeak the languages. The 2d is called the *little oda*, where, from the age of 14 or 15 years, till about 20, they are trained up to arms, and the ſtudy of all the polite learning the Turks are acquainted with. The 3d chamber, called *kilar oda*, conſiſts of 200 pages, who, beſides their other exerciſes, are under the command of the kilardgi bachi, and ſerve in the pantry and fruitery. The 4th conſiſts only of 24, who are under the command of the khazineda bachi, and have the charge of the treaſure in the grand ſignior's apartment, which they never enter with clothes that have pockets. The 5th is called *has oda* or *privy-chamber*, and is compoſed only of 40 pages, who attend in the prince's chamber. Every night eight of theſe pages keep guard in the grand ſignior's bed-chamber while he ſleeps: they take care that the light, which is conſtantly kept in the room, does not glare in his eyes, leſt it ſhould awake him; and if they find him diſturbed with troubleſome dreams, they cauſe him to be awaked by one of their agas.

ODA-BACHI, or ODDABASSI, an officer in the Turkiſh ſoldiery, equivalent to a ſerjeant or corporal among us. The common ſoldiers and janizaries, called *oldachis*, after having ſerved a certain term of years, are always preferred and made biquelairs; and of biquelairs in time become odabachis, *i. e.* corporals of companies, or chiefs of certain diviſions, whoſe number is not fixed; being ſometimes 10, and ſometimes 20. Their pay is ſix doubles per month; and they are diſtinguiſhed by a large felt, a foot broad and above a foot long, hanging on the back, with two long oſtrich feathers.

ODACON. See ANTEDILUVIANS, § 8.

ODALENGA, a town of France, in the dep. of Seſia, and late Piedmonteſe, 6 miles E. of Verrua, and 6 ESE. of Creſcentio.

* ODD. *adj.* [*udda*, Swediſh.] 1. Not even; not diviſible into equal numbers.—

This is the third time: I hope
Good luck lies in *odd* numbers. *Shak.*

—What verity there is in that numeral conceit, in the lateral diviſion of man by even and *odd*; aſcribing the *odd* unto the right ſide, and the even unto the left. *Brown.* 2. More than a round number; indefinitely exceeding any number ſpecified.—The account of the profits of Ulſter, from the 5th year of Edward III. until the 8th, do amount but to 900 and *odd* pounds. *Davies.*—Sixteen hundred and *odd* years after the earth was made, it was deſtroyed in a deluge of water. *Burnet.*—The year, without regard to days, ends with an *odd* day and *odd* hours, *odd* minutes, and *odd* ſeconds; ſo that it cannot be meaſured by any even number of days, hours, or minutes. *Holder.* 3. Particular; uncouth; extraordinary; not like others; not to be numbered among any claſs. In a ſenſe of contempt or diſlike.—

Her madneſs hath the *oddeſt* frame of ſenſe,
Such a dependency of thing on thing,
As e'er I heard in madneſs. *Shak.*

Of thee, kind boy, I aſk no red and white,
To make up my delight,
No *odd* becoming graces,
Black eyes, or little know-not-what's in faces.
Suckling.

—When I broke looſe from writers who have employed their wit and parts in propagating of vice, I did not queſtion but I ſhould be treated as an *odd* kind of a fellow. *Spectator.*—

Some *odd* unthinking youth
Might have refus'd to let his ears
Attend the muſic of the ſpheres. *Prior.*

—This blue colour being made by nothing elſe than by reflection of a ſpecular ſuperficies, ſeems ſo *odd* a phenomenon, and ſo difficult to be explained by the vulgar hypotheſis of philoſophers, that I could not but think it deſerved to be taken notice of. *Newton.*—

So proud I am no ſlave,
So impudent I own myſelf no knave,
So *odd*, my country's ruin makes me grave.
Pope.

To counterpoiſe this hero of the mode,
Some for renown are ſingular, and *odd*. *Young.*

4. Not noted; not taken into the common account; unheeded.—

I left him cooling of the air with ſighs,
In an *odd* angle of the iſle. *Shak.*

—There are yet miſſing ſome few *odd* lads that you remember not. *Shak.* 5. Strange; unaccountable; fantaſtical.—

How ſtrange or *odd* ſoe'er I bear myſelf. *Shak.*

—It is an *odd* way of uniting parties, to deprive a majority of part of their ancient right. *Swift.*—Patients have ſometimes coveted *odd* things which have relieved them. *Arbuthnot.*—

With ſuch *odd* maxims to thy flocks retreat.
Young.

6. Uncommon; particular.—The *odd* man to perform all three perfectly is Joannes Stumius. *Aſcham.* 7. Unlucky.—

The truſt Othello puts him in,
On ſome *odd* time of his infirmity,
Will ſhake this iſland. *Shak.*

8. Unlikely; in appearance improper.—Mr Locke's Eſſay would be a very *odd* book for a man to make himſelf maſter of, who would get a reputation by critical writings. *Addiſon.*

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(1.) ODDENA, a town of Africa, in Fetu, on the Gold Coaſt.

(2.) ODDENA, a town of Arabia, near Taas.

ODDER, a town of Arabia, in Yemen.

(1.) * ODDLY. *adv.* [from *odd*. This word and *oddneſs*, ſhould, I think, be written with one *d*; but the writers almoſt all combine againſt it.] 1. Not evenly. 2. Strangely; particularly; irregularly; unaccountably; uncouthly; contrarily to cuſtom.—

How *oddly* will it ſound, that I
Muſt aſk my child forgiveneſs. *Shak.*

—One man is preſſed with poverty, and looks ſomewhat *oddly* upon it. *Collier.*—The dreams of ſleeping men are made up of the waking man's ideas, though for the moſt part *oddly* put together. *Locke.*—A figure a little more *oddly* turned had caſt him, and he had been executed. *Locke.*—If ſeveral men were to be aſked concerning ſome *oddly* ſhaped fetus, whether it were a man or no? one ſhould meet with different anſwers. *Locke.*—

Her awkward love indeed was *oddly* fated;
She and her Polly were too near related. *Prior.*

Yet from theſe colours *oddly* mix'd,
Your ſight upon the whole is fix'd. *Prior.*

—They had ſeen a great black ſubſtance lying on the ground, very *oddly* ſhaped. *Swift.*—Foſſils are very *oddly* and elegantly ſhaped. *Bentley.*

(2.) ODDLY ODD NUMBERS. See NUMBER, § VII. 14.

* ODDNESS. *n. ſ.* [from *odd*.] 1. The ſtate of being not even. 2. Strangeneſs; particularity; uncouthneſs; irregularity.—Cicero begged it as alms of the hiſtorians, to remember his conſulſhip: and obſerve the *oddneſs* of the event; all their hiſtories are loſt; and the vanity of his requeſt ſtands recorded in his own writings. *Dryden.*—A knave is apprehenſive of being diſcovered; and this habitual concern puts an *oddneſs* into his looks. *Collier.*—My wife fell into a violent diſorder, and I was a little diſcompoſed at the *oddneſs* of the accident. *Swift.*

* ODDS. *n. ſ.* [from *odd*.] 1. Inequality; exceſs of either compared with the other.—Between theſe two caſes there are great *odds*. *Hooker.*—There appeareth great *odds* between them. *Spenſ.*

I will lay the *odds* that ere this year expire,
We bear our civil ſwords and native fire
As far as France. *Shak.*

I chiefly, who enjoy
So far the happier lot, enjoying thee,
Pre-eminent by ſo much *odds*. *Milton.*

Shall I give him to partake
Full happineſs with me? or rather not;
But keep the *odds* of knowledge in my pow'r
Without copartner? *Milton.*

Cromwell, with *odds* of number and of fate,
Remov'd this bulwark of the church and ſtate. *Waller.*

—All the *odds* between them has been the different ſcope that has been given to their underſtandings to range in. *Locke.*—Judging is balancing an account, and determining on which ſide the *odds* lie. *Locke.* 2. More than an even wager; more likely than the contrary.—It is *odds* but he will find a ſhrewd temptation. *South.*—The preſbyterian party endeavoured one day to introduce a debate about repealing the teſt clauſe, when there appeared at leaſt four to one *odds* againſt them. *Swift.*—Some biſhop beſtows upon them ſome inconſiderable benefice, when 'tis *odds* they are already encumbered with a numerous family. *Swift.* 3. Advantage; ſuperiority.—

The ſword, ſome underſtood,
In force had much the *odds* of wood. *Hudibras.*

4. Quarrel; debate; diſpute.—

I can't ſpeak
Any beginning to this peeviſh *odds*. *Shak.*

What is the night?
Almoſt at *odds* with the morning. *Shak.*

He ſlaſhes into one groſs crime or other,
That ſets us all at *odds*. *Shak.*

The fox, the ape, and humble bee,
Were ſtill at *odds*, being but three;
Until the gooſe came out of door,
And ſtaid the *odds* by making four. *Shak.*

Gods of whatſoe'er degree,
Reſume not what themſelves have giv'n,
Or any brother god in heav'n;
Which keeps the peace among the gods,
Or they muſt always be at *odds*. *Swift.*

(1.) * ODE. *n. ſ.* [*ωδη*.] A poem written to be ſung to muſick; a lyrick poem. The ode is either of the greater or leſs kind. The leſs is characteriſed by ſweetneſs and eaſe; the greater by ſublimity, rapture, and quickneſs of tranſition.—A man haunts the foreſt that abuſes our young plants with carving Roſalind on their barks; hangs *odes* upon hawthorns, and elegies on brambles; all forſooth deifying the name of Roſalind. *Shak.*—

O run, prevent them with thy humble *ode*,
And lay it lowly at his bleſſed feet. *Milton.*

What work among you ſcholar gods!
Phœbus muſt write him am'rous *odes*;
And thou, poor couſin, muſt compoſe
His letters in ſubmiſſive proſe. *Prior.*

(2.) ODE. See POETRY.

ODED, a prophet of the Lord, who, being at Samaria, when the Iſraelites returned from the war, with their king Pekah, together with 200,000 of the people of Judah captives, by a ſeaſonable admonition, prevailed on the victors to reſtore their captive brethren to liberty; as recorded in 2 Chron. xxviii. See AHAZ.

ODEGNO, a town of France, in the dep. of Marengo, and late duchy of Montferrat; 14 miles E. of Ceva.

ODEIDA, a town of Yemen, 80 miles NE. of Aden.

ODELL, Thomas, a dramatic writer, born in Buckinghamſhire. He erected a theatre in Goodman's Fields, in 1729; and in 1738 was appointed Deputy Maſter of Revels. He wrote four dramatic pieces, which met with ſucceſs. He died in 1749.

ODEMIRA, a town of Portugal, in Alentejo; 24 miles SW. of Ourique, and 13½ SE. of Sines.

(1.) ODEN. See ODIN, ODINUS, and WODEN.

(2.) ODEN, mountains of Germany. See ABNOBA.

ODENATUS, a celebrated prince of Palmyra. He very early inured himſelf to bear fatigues, and by hunting leopards and wild beaſts, accuſtomed himſelf

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himself to the labours of a military life. He was a faithful friend to the Romans; and when Aurelian was taken prisoner by Sapor king of Persia, Odenatus solicited his release, by writing to the conqueror, and by sending him presents. The Persian tyrant was offended at this liberty, tore the letter, and ordered the presents to be thrown into a river; and commanded Odenatus to appear before him, on pain of being devoted to instant destruction. Odenatus despised this haughty summons, and opposed force by force. He obtained considerable advantages over the troops of Sapor, and took his wife prisoner, with a great booty. In return for these services Gallienus then emperor, named Odenatus his colleague, and gave the title of *Augustus* to his children and of *Augusta* to his wife, the celebrated ZENOBIA. Odenatus, thus invested with new power, resolved to signalise himself more conspicuously, but he perished by the dagger of one of his own relations, whom he had slightly offended at a domestic entertainment. He died at Emessa about A. D. 267, and Zenobia succeeded him. See PALMYRA.

ODENBACH, a town of France, in the dep. of Mont Tonnere, and late duchy of Deux Ponts; 3 miles S. of Meissenheim.

ODENHEIM, a village and princely priory of Germany in the circle of the Upper Rhine, 14 miles S. of Heidelberg; founded in 1122. The ci-devant bishop of Spire, had a seat and vote at the imperial diet as prior of Odenheim.

ODEN-HOTUN, *a* town of Corea, 425 miles E. of Peking.

ODENSALA, a town of Sweden, in Upland.

ODENSEE, the capital of the isle of Funen, a place of such high antiquity, that some Danish writers derive its foundation and name from ODEN, or WODEN, the god and hero of the Gothic nations. "Its name certainly occurs (says Mr Coxe) in the earliest ages of the Danish history; and it was a town of great note long before Copenhagen existed. It stands upon a small river, not navigable, which runs into a bay of the Categate, about two miles from the bay of Stegestand. Many of the houses are ancient, bearing dates about the middle of the 16th century; but part is newly built: it contains about 5200 inhabitants, who carry on some trade, exporting chiefly grain and leather; the latter is much esteemed, and its goodness is supposed to arise from a certain property in the river water in which it is soaked for tanning. The Danish cavalry are supplied from thence with the greatest part of their leathern accoutrements. Its strong beer is also much esteemed. Odensee is a bishopric, founded by Harold Blaatand in 980, and is the richest in Denmark, next to Copenhagen. It has a school, endowed by the celebrated Q. Margaret, in which a number of scholars, from 6 to 16 years of age, are instructed gratis; they live and board in the town, and receive each a yearly pension. There is also a gymnasium, instituted by Christian IV. for students of the age of 16. This seminary was improved by the liberality of HOLBERG the Danish historian, but is now greatly fallen from its former flourishing state. The Cathedral is a large old brick building. The church formerly belonged to the convent of Recolets, and contains the sepulchre of John king of Denmark, and his son Christian II." Odensee lies 22 miles from Assens, and 75 W. of Copenhagen. Lon. 10. 27. E. Lat. 55. 28. N.

ODENSWI, a town of Sweden, in Smaland.

(1.) ODER, a river of France, which runs into the sea, 3 miles below Quimper, in the department of Finisterre.

(2.) ODER, a river of Germany, which rises near a town so named in Silesia, and on the confines of Moravia. It runs N. through that province, and then into the Marche at Brandenburg and Pomerania, where it forms a large lake, afterwards falling into the Baltic Sea by three mouths; between which lie the islands Usedom and Wolin. It passes by several towns; as Ratibor, Opelen, Breslau, Glogau, and Crossen, in Silesia; Francfort, Lebus, and Custrin, in Brandenburg; and Gartz, Stetin, Cammin, Wollin, Usedom, and Wolgast, in Pomerania.

(3.) ODER, a town of Silesia, at the source of the Oder, 16 miles SW. of Troppaw. Lon. 17. 30. E. Lat. 50. 46. N.

(4. ODER, ALT, a river of Silesia, which runs into the ODER (N° 2.), one mile NW. of Breslau.

(1.) ODERBERG, a town of Brandenburg, on the Oder, 25 miles NW of Custrin, and 35 NE. of Berlin.

(2.) ODERBERG, } or BOGUMIN, a town of Si-
ODERBURG, } lesia, in Teschen, at the confluence of the Oder and Esla, 12 miles SSW. of Ratibor. Lon. 18. 10. E. Lat. 50. 2. N.

ODERLIUNGA, a town of Sweden, in Schonen; 17 miles E. of Engelholm.

ODERNHEIM, two towns of Germany, now annexed to the French empire, and both included in the department of Mont Tonnere; viz. 1st, in the circle of the Lower Rhine, and late Palatinate, formerly imperial, 13 miles NW. of Worms, and 14 (Dr Brookes says 20) S. of Mentz. Lon. 8. 10. E. Lat. 49. 45. N.; 2d, in the circle of the Upper Rhine, and ci-devant duchy of Deux Ponts; 4 miles N. of Wessenheim, and 8 WSW. of Creutznach.

ODERQUAT, a town of Germany, in Bremen; 15 miles N. of Stade.

ODER-SEIFF, a lake of Silesia, in Breslau.

ODERZO, a town of Maritime Austria, in the Trevisan, 13 miles SE. of Ceneda, and 13 NE. of Trevigio.

ODESTUGU, a town of Sweden, in Smaland, 13 miles SE. of Jonkioping.

ODEUM, in Grecian antiquity, a music theatre built by Pericles; the inside of which was filled with seats and ranges of pillars, and on the outside, the roof descended shelving downwards from a point in the centre, with many bendings, in imitation of the king of Persia's pavilion. Here the musical prizes were contended for; and here also, according to Aristophanes, was a tribunal.

ODEYPOUR, a town of Indostan, in Orixa, 190 miles NW. of Cattack.

* ODIBLE. *adj.* [from *odi*, Lat.] Hateful.

ODIEL, a river of Spain, which runs into the Tinto near its mouth.

ODIHAM, a town of Hampshire, seated near a navigable canal, between the Wye and Thames. It is a corporation and has a market on Sat. It had

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a palace and caſtle, which was bravely defended by 13 Engliſh ſoldiers againſt the Dauphin of France, in the reign of K. John. In that of Edward III, David II. K. of Scots was kept priſoner in it. It is 25 m. NE. of Wincheſter, and 42 W. by S. of London. Lon. 0. 56. W. Lat. 51. 18. N.

(1.) ODIN, in Saxon mythology, called alſo in the dialect of the Anglo Saxons WODEN, or WODAN, a name given by the ancient Scythians to their ſupreme god.

(2.) ODIN, in Saxon hiſtory, a name aſſumed about A. A. C. 70. by SIGGE, a Scythian prince, who conquered the northern nations, made great changes in their government, manners, and religion, enjoyed great honours, and had even divine honours paid him. According to the account given of this conqueror by Snorro, the ancient hiſtorian of Norway, and his commentator Torfæus, Odin was a Scythian, who withdrew himſelf, with many others in his train, by flight, from the vengeance of the Romans, under Pompey; and having officiated as prieſt in his own country, he aſſumed the direction of the religious worſhip, as well as the civil government, of the nations which he conquered Having ſubdued Denmark, Sweden, and Norway, he retired to Sweden where he died. Dr Henry gives this account of him: "Odin is believed to have been the name of the one true God among the firſt colonies who came from the eaſt and peopled Germany and Scandinavia, and among their poſterity for ſeveral ages. But at length a mighty conqueror, the leader of a new army of adventurers from the eaſt, over-run the north of Europe, erected a great empire, aſſumed the name of ODIN, and claimed the honours which had been formerly paid to that deity. From thenceforward this deified mortal, under the name of *Odin* or *Wodin*, became the chief object of the idolatrous worſhip of the Saxons and Danes in this iſland, as well as of many other nations. Having been a mighty and ſucceſsful warrior, he was believed to be the god of war, who gave victory, and revived courage in the conflict. Having civiliſed, in ſome meaſure, the countries which he conquered, and introduced arts formerly unknown, he was alſo worſhipped as the god of arts and artiſts. In a word, to this Odin his deluded worſhippers impiouſly aſcribed all the attributes which belong only to the true God; to him they built magnificent temples, offered many ſacrifices, and conſecrated the fourth day of the week, which is ſtill called by his name *Woden's day* or *Wedneſday* in England and in all the other countries where he was formerly worſhipped. Notwithſtanding all this, the founders of all the kingdoms of the Anglo-Saxon heptarchy pretended to be deſcended from Wodin, and ſome of them at the diſtance only of a few generations." His wife's name was *Frea*. See FREA, and MYTHOLOGY, § 41.

ODIN'S FIRE. We have this account of it in Gough's Cambden: "In Evie pariſh, in the Orkneys, near the ſea, are ſome rocks which frequently in the night appear on fire; and the church of St Michael there was often ſeen full of lights called fires ſent by Odin to guard their tombs; but now ceaſed. This may be a meteor, or ſome inflammable matter on the cliffs, as at Charmouth Dorſet."

ODINUS, a celebrated hero of antiquity, who flouriſhed about 70 years before the Chriſtian era, in the northern part of ancient Germany, and Denmark. He was at the ſame time a prieſt, a ſoldier, a poet, a monarch, and a victor. He impoſed upon the credulity of his ſuperſtitious countrymen, and made them believe that he could raiſe the dead, and that he was acquainted with futurity. When he had extended his power and increaſed his fame by conqueſt and by artifice, he determined to die in a different way from other men. He aſſembled his friends, and with the ſharp point of a lance he made in his body nine different wounds in the form of a circle; and when expiring, he declared that he was going to Scythia, where he ſhould become an immortal god. He added that he would prepare bliſs and felicity for thoſe of his countrymen who lived a virtuous life, who fought with bravery, and who died like heroes in the field of battle. Theſe injunctions had the wiſhed-for effect: his countrymen ſuperſtitiouſly believed him, and conſtantly recommended themſelves to his protection when they engaged in battle; and they entreated him to receive the ſouls of ſuch as fell in war. He ſeems to be the ſame with ODIN.

De ODIO ET ATIA. See IMPRISONMENT, § 3. The writ *de odio et atia* was anciently directed to the ſheriff, commanding him to inquire whether a priſoner charged with murder was committed upon juſt cauſe of ſuſpicion, or merely *propter odium et atium*, for hatred and ill-will; and if upon the inquiſition due cauſe of ſuſpicion did not then appear, then there iſſued another writ for the ſheriff to admit him to bail. This writ, according to Bracton, ought not to be denied to any man; it being expreſsly ordered to be made out *gratis*, without any denial, by *magna charta*, c. 26. and ſtat. Weſtm. 2. 13 Edw. I. c. 29. But the ſtatute of Glouceſter, 6 Edw. I. c. 9. reſtrained it in the caſe of killing by miſadventure or ſelf-defence; and the ſtatute 28 Edw. III. c. 9. aboliſhed it in all caſes whatſoever; but as the ſtat. 42 Ed. III. c. 1. repealed all ſtatutes then in being contrary to the great charter, Sir Edward Coke is of opinion that the writ *de odio et atia* was thereby revived. See HABEAS CORPUS.

* ODIOUS. *adj.* [*odieux*, Fr. *odioſus*, Latin.] 1. Hateful; deteſtable; abominable.—For ever all goodneſs will be moſt charming; for ever all wickedneſs will be moſt *odious*. *Spratt.*—If there could have been hatred in the world, when there was ſcarce any thing *odious*, it would have acted within the compaſs of its proper object. *South.*—

Expel from Italy that *odious* name. *Dryden.*

She breathes the *odious* fume
Of nauſeous ſteams. *Granville.*

2. Expoſed to hate.—As by unjuſt dealing they became moſt *odious*, ſo by juſtice in their puniſhments the prince acquired both love and applauſe. *Hayward.*—He had rendered himſelf *odious* to the parliament. *Clarend.* 3. Cauſing hate; invidious.

Therefore hated, therefore ſo beſet
With foes, for daring ſingle to be juſt,
And utter *odious* truth. *Milton's Par. Loſt.*

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4. A word expreſſive of diſguſt: uſed by women.—

Green fields, and ſhady groves, and cryſtal ſprings,
And larks, and nightingales, are *odious* things.
Young.

* ODIOUSLY. *adv.* [from *odious*.] 1. Hatefully; abominably.—

Had thy love, ſtill *odiouſly* pretended,
Been, as it ought, ſincere, it would have taught thee
Far other reas'nings. *Milton's Agoniſtes.*

2. Indidiouſly; ſo as to cauſe hate.—Arbitrary power no ſober man can fear, either from the king's diſpoſition or his practice; or even where you would *odiouſly* lay it, from his miniſters. *Dryden.*

* ODIOUSNESS. *n. ſ.* [from *odious*.] 1. Hatefulneſs.—Have a true ſenſe of his ſin, of its *odiouſneſs*, and of its danger. *Wake's Preparations.* 2. The ſtate of being hated.—There was left of the blood royal an aged gentleman of approved goodneſs, who had gotten nothing by his couſin's power but danger from him, and *odiouſneſs* for him. *Sidney.*

* ODIUM. *n. ſ.* [Latin.] Invidiouſneſs; quality of provoking hate.—The *odium* and offences which ſome men's rigour or remiſſneſs had contracted upon my government, I was reſolved to have expiated. *King Charles.*

She threw the *odium* of the fact on me,
And publicly avow'd her love to you. *Dryd.*

—Projectors, and inventors of new taxes being hateful to the people, ſeldom fail of bringing *odium* upon their maſter. *Davenant.*

ODNESS, a cape of Scotland, on the E. coaſt of the iſle of Stronſa. Lon. 0. 47. E. of Edin. Lat. 58. 59. N.

(1.) ODO, or ST ODO, ſecond Abbot of Clugni in France, was illuſtrious for learning and piety in the 10th century. The ſanctity of his life contributed greatly to enlarge the congregation of Clugni; and he was ſo eſteemed, that popes, biſhops, and ſecular princes, uſually choſe him the arbiter of their diſputes. He died about the year 942, and his works are printed in the *Bibliotheque of Clugni.*

(2.) ODO CANTIANUS, ſo called as being a native of *Kent* in England, waa a Benedictine monk in the 12th century, in which order his learning and eloquence raiſed him to the dignity of prior and abbot. Abp. Becket was his friend; and his panegyric was made by John of Saliſbury. He compoſed *Commentaries on the Pentateuch* and the *2d Book of Kings; Moral Reflections on the Pſalms;* treatiſes intitled, *De onere Philiſtim; De moribus Eccleſiaſticis; De vitiis et virtutibus Animæ*, &c.

ODOACER, king of the Heruli, according to Ennodius, was only a private man in the guards of the emperor Auguſtulus, when (A. D. 476, under the conſulſhip of Baſilicus and Armatus) the barbarians choſe him for their leader. The barbarians thought, as they often defended Italy, they had a right at leaſt to part of it; but upon demanding it they were refuſed, and the conſequence was a revolt. Odoacer is ſaid to have been a man of uncommon parts, capable alike of commanding an army or governing a ſtate. Having left his own country when he was very young, to ſerve in Italy, as he was remarkably tall, he was admitted among the emperor's guards, and continued in that ſtation till the above year; when, putting himſelf at the head of the barbarians in the Roman pay, who, though of different nations, had unanimouſly choſen him for their leader, he marched againſt Oreſtes and his ſon Auguſtulus, who ſtill refuſed to ſhare any of the lands in Italy. The Romans being inferior both in numbers and valour were eaſily conquered: Oreſtes was ordered to be ſlain; but Auguſtulus was ſpared, and, though ſtripped of his dignity, was treated with humanity, and allowed a liberal ſum for his ſupport and that of his relations. Odoacer was proclaimed king of Italy, but aſſumed neither the purple nor any other mark of imperial dignity. He was afterwards defeated and ſlain by THEODORIC the Oſtrogoth. See GOTHS, and ITALY, § 6.

ODOEV, a town of Ruſſia, in Tula, on Upha.

ODOLI HOTUN, a town of Chineſe Tartary.

ODOMANTI, an ancient nation of Thrace, on the E. banks of the Strymon. *Liv.* lxv. *c.* 4.

ODONCK, a fort of France, in the dep. of the Scheldt, and late prov. of Auſtrian Flanders, on the Lys; 6 miles below Ghent.

ODONES, an ancient people of Thrace.

ODONTALGIA, the TOOTHACH. See MEDICINE, *Index.*

* ODONTALGICK. *adj.* [ὀδὼν and ἄλγος.] Pertaining to the tooth-ach.

ODONTOIDE, in anatomy, an appellation given to the proceſs of the ſecond vertebra of the neck, from it reſemblance to a tooth.

ODORAN, a French monk, born at Sens, who flouriſhed about 1035. He wrote a chronicle entitled *Chronica Rerum in orbe geſtarum;* which comes down from A. D. 875 to 1032.

* ODORATE. *adj.* [*odoratus*, Latin.] Scented; having a ſtrong ſcent, whether fœtid or fragrant.—Smelling is with a communication of the breath, or vapour of the object *odorate. Bacon's Natural Hiſtory.*

* ODORIFEROUS. *adj.* [*odorifer*, Lat.] Giving ſcent; uſually, ſweet of ſcent; fragrant; perfumed.—A bottle of vinegar, ſo buried, came forth more lively and *odoriferous*, ſmelling almoſt like a violet. *Bacon.*—

There ſtood in his room preſſes that enclоſed
Robes *odoriferous.* *Chapman.*
Gentle gales,
Fanning their *odoriferous* wings diſpenſe
Native perfumes. *Milton's Paradiſe Loſt.*

—A grain of muſk will ſend forth *odoriferous* particles for ſcores of years, without its being ſpent. *Locke.*

* ODORIFEROUSNESS. *n. ſ.* [from *odiferous.*] Sweetneſs of ſcent; fragrance.

* ODOROUS. *adj.* [*odorus*, Latin.] Fragrant; perfumed; ſweet of ſcent.—

Such fragrant flowers do give moſt *odorous* ſmell,
But her ſweet odour did them all excel.
Spenſer.

Their private roofs on *odorous* timber born,
Such as might palaces for kings adorn. *Waller.*

—We

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—We ſmell, becauſe parts of the *odorous* body touch the nerves of our noſtrils. *Cheyne's Phil. Prin.*

ODOVARA, a ſea-port of Japan, in Niphon, 120 miles ENE. of Meaco.

* ODOUR. *n. ſ.* [*odor*, Lat. *odeur*, Fr.] 1. Scent, whether good or bad.—Democritus, when he lay a dying, ſent for loaves of new bread, which having opened and poured a little wine into them, he kept himſelf alive with the *odour* till a certain feaſt was paſt. *Bacon.*—Infuſions in air, for ſo we may call *odours*, have the ſame diverſities with infuſions in waters; in that the ſeveral *odours* which are in one flower, or other body, iſſue at ſeveral times, ſome earlier, ſome latter. *Bacon.*—They refer ſapor unto ſalt, and *odour* unto ſulphur. *Brown's Vulg. Errours.*

Black kennels abſept *odours* ſhe regrets,
And ſtops her noſe at beds of violets. *Young.*

2. Fragrance; perfume; ſweet ſcent:—

Meſeem'd I ſmelt a garden of ſweet flow'rs,
That dainty *odours* from them threw around.
Spenſer.

—By her interceſſion with the king ſhe would lay a moſt ſeaſonable and popular obligation upon the whole nation, and leave a pleaſant *odour* of her grace and favour to the people behind her. *Clarendon.*—The Levites burned the holy incenſe in ſuch quantities as refreſhed the whole multitude with its *odours*. *Addiſon.*

ODRAU, a town of Sileſia, in Oppau.

ODRYSÆ, an ancient nation of Thrace, between the Abdera and the Iſter. *Liv.* xxxix. 53.

ODYCK, a town of Holland, in the dep. of the Rhine, and late prov. of Utrecht, 9 miles SE. of Utrecht.

ODYSSEA. See ODYSSEY.

ODYSSEUM, in ancient geography, a promontory of Sicily, W. of Pachynus; ſo named from Ulyſſes.

ODYSSEY, an epic poem compoſed by Homer; ſo named from Ὀδυσσεύς, the Greek name of ULYSSES, whoſe adventures it records.

* OE. This combination of vowels does not properly belong to our language, nor is ever found but in words derived from the Greek, and not yet wholly conformed to our manner of writing: *oe* has in ſuch words the ſound of *E*.

(1.) OEA, an ancient city of Africa, now called TRIPOLI. *Plin.* v. 4.

(2.) OEA, a town of Ægina, *Herodot.* v. 83.

ŒAGER, or } in fabulous hiſtory, a king
(1.) ŒAGRUS, } of Thrace, the father of the poet Orpheus, by the Muſe, Calliope. See ORPHEUS.

(2.) ŒAGRUS or ŒAGRIUS, a river of Thrace.

ŒANTHE, or } a town of Achaia, where Ve-
ŒANTHIA, } nus had a temple. *Pauſ.* x. 38.

ŒAX, a brother of PALAMEDES.

ŒBALIA, an ancient name of LACONIA, or SPARTA, ſo called from

ŒBALUS, an ancient king of Sparta, the ſon of Cynortas, and father of TYNDARUS, the huſband of Leda.

ŒCHALIA, a country of Peloponneſus, in Laconia, with its capital, which was deſtroyed by Hercules.

OECHIONE, a ſingular fiſh of Mexico. See MEXICO, § 14.

OECOLAMPADIUS, John, a celebrated German reformer, born at Rainſpurg in Franconia, in 1482. He ſtudied at Heilbrun, and afterwards at Heidelburg, where he took his degree of bachelor in philoſophy in his 14th year. His reputation induced the elector-palatine to appoint him preceptor to his ſon. He completed his ſtudies at Tubingen, under Reuchlin; after which he was invited to Baſil, and made D. D. At Augſburg, he embraced the ſentiments of Luther, and publiſhed his *Confeſſion*, which containing doctrines diſagreable to the monks of his convent, he quitted it, and returned to Baſil, in 1522, where the council appointed him profeſſor of divinity and city preacher. He tranſlated *St Chryſoſtom's Commentaries upon Geneſis* into Latin. In the diſpute between Luther and Zuinglius reſpecting the euchariſt, he defended the opinions of the latter, in a work which is reckoned well written. In 1528 he married, and completed the reformation of the churches of Baſil and Ulm. In 1529, he aſſiſted at the conference at Marſpurg; and returning to Baſil, died of the plague, in 1531, aged 49. A monument is erected in the cathedral to his memory. He left a ſon and two daughters. His works are numerous and reſpectable.

(1.) * OECONOMICKS. *n. ſ.* [οἰκονομικος; *economique*, Fr. from *oeconomy*. Both it and its derivatives are under ECONOMY.] Management of houſehold affairs.—A prince's leaving his buſineſs wholly to his miniſters, is as dangerous an errour in politicks, as a maſter's committing all to his ſervants is in *oeconomicks*. *L'Eſtrange.*

(2.) OECONOMICS, the art of managing the affairs of a family or community.

OECONOMISTS, a ſect of philoſophers in France, who lately made a great noiſe in Europe, and are generally believed to have been unfriendly to religion, and to have paved the way for the numberleſs horrors attending the French revolution, by eradicating all regard for it from the minds of the people. The founder of this ſect was Dr Duqueſnai, who had ſo well inſinuated himſelf into the favour of Lewis XV. that he uſed to call him *his thinker*. The ſect was ſtyled *Oeconomiſts*, becauſe the economy and order to be introduced into the finances, and other plans of alleviating the diſtreſſes of the people, were their conſtant topics. The Abbe Baruel admits, that ſome few of them may have had no other objects; but he adduces very plauſible evidence, that the great aim of the majority of the ſect was to eradicate from the minds of the people all reverence for divine revelation. This they endeavoured to do by printing and diſperſing among the people at very low prices, and often *gratis*, by the hands of hawkers, pedlars, &c. pamphlets and ſmall books, containing extracts from the works of Voltaire, Diderot, and other modern philoſophers, againſt religion, morals and government. Under pretence of ameliorating the condition of the people, and inſtructing them, they drew ſeveral of the king's beſt friends in, to patronize their ſociety and their oſtenſible meaſures; but in the mean time held private and ſecret meetings with all whom they could truſt, at Baron Holbach's; where

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where they prepared and revised their tracts for publication; in some of which they disguised their sentiments, but in others were so bold, as to publish under such titles as *Christianity Unmasked!* &c. Their principal members were Messrs. D'Alembert, Turgot, Condorcet, Diderot, La Harpe, and La Moignon, keeper of the seals, who, on his dismission from that office, shot himself. Abbé Baruel gives a particular account of the remorse of one of the King's friends, after the commencement of the revolution, for having been connected with the Oeconomists;—for which, with other particulars respecting them, we must refer to the Abbe's works.

OECONOMUS. *n. s.* a person who takes care of the revenues and other affairs of churches, monasteries, and the like.

(1.) OECONOMY, *n. s.* the prudent conduct, or discreet and frugal management, whether of a man's own estate or that of another. See Economy.

(2.) Oeconomy, Animal, comprehends the various operations of nature in the generation, nutrition, and preservation of animals. See Generation, Natural History, Nutrition, &c. The doctrine of the animal œconomy is nearly connected with physiology, which explains the several parts of the human body, their structure, use, &c. See Anatomy, and Medicine, *Indexes*.

(3.) Oeconomy, Rural, a term synonymous with Agriculture, or Husbandry. See Rural Oeconomy.

* OECUMENICAL. *adj.* [οικυμενικος from οικυμενη.] General; respecting the whole habitable world.—This Nicene council was not received as an *œcumenical* council in any of the eastern patriarchates, excepting only that of Constantinople. *Stillingfleet.*—We must not make a computation of the Catholick church from that part of it which was within the compass of the Roman empire, though called *œcumenical*. *Lesley.*

OECUMENIUS, a Greek author who flourished in the middle of the 10th century, and wrote a paraphrase of some of the books of the New Testament, in Greek. His works were printed, along with those of Aretas, in 1631, in 2 vols. fol.

(1.) * OEDEMA. *n. s.* [οιδημα from οιδεω, to swell.] A tumour. It is now and commonly by surgeons confined to a white, soft, insensible tumour, proceeding from cold, and aqueous humours, such as happen to hydropick constitutions. *Quincy.*

(2.) *An* Oedema, or Phlegmatic Tumour, in medicine and surgery, is a tumour attended with paleness and cold, yielding little resistance, retaining the print of the finger when pressed with it, and accompanied with little or no pain. It has no certain situation in any particular part of the body, since the head, eye-lids, hands and sometimes part, sometimes the whole body, is afflicted with it. When this last is the case, the patient is said to be troubled with a cahexy, leucophlegmatia, or dropsy. But if any particular part is more subject to this disorder than another, it is certainly the feet, which are at that time called *œdematous feet*.

* OEDEMATICK. } *adj.* [from *oedema.*] Per-
* OEDEMATOUS. } taining to an oedema.—It is primarily generated out of the effusion of melancholick blood, or secondarily out of the dregs and remainder of a phlegmonous or *oedematick* tumour *Harvey.*—*Oedematous* swellings arose in her legs, and she languished and died. *Wiseman's Surgery.*

OEDER, George Christian Von, a late celebrated botanist, born at Anspach, Feb. 3d, 1728. He studied physic, and particulary botany, under the celebrated Dr Haller, through whose recommendation, he was appointed professor of botany at Copenhagen. The unfortunate Struensee procured for him, in 1773, an appointment in the college of finances, but his patron being executed, he retained it only a few months. He was afterwards appointed *Landvogt* at Oldenburgh. He published the celebrated *Flora Danica*; and died at Oldenburgh, 10th Feb. 1791, aged 63.

OEDERA, in botany, a genus of the polygamia segregata order, belonging to the syngenesia class of plants. The calices are multiflorous; the corollets tubular, hermaphrodite, and one or two feminine ones ligulate; the receptacle is chaffy; the poppus with numerous chaff.

OEDERAN, or } a town of Upper Saxony, in
OEDERN, } Erzgeburg; 26 miles WSW. of Dresden.

OEDIPUS, the unfortunate king of Thebes, whose history is partly fabulous, flourished about 1266 B. C. He was given by his father to a shepherd, who was ordered to put him to death, to prevent the misfortunes with which he was threatened by an oracle. But the shepherd, unwilling to kill him with his own hands, tied him by the feet to a tree, that he might be devoured by wild beasts. The infant was however found in this situation by another shepherd named *Phorbas*, who carried him to Polybus king of Corinth; where the queen having no children, educated him with as much care as if he had been her own son. When he was grown up, he was informed that he was not the son of Polybus: on which, by order of the oracle, he went to seek for his father in Phocis; but scarce was he arrived in that country, when he met his father on the road, and killed him without knowing him. A short time after, having delivered the country from the monster called the *Sphinx*, he married Jocasta, without knowing that she was his mother, and had four children by her; but afterwards, being informed of his incest, he quitted the throne, and, thinking himself unworthy of the light, put out his eyes. Eteocles and Polynices, who were celebrated amongst the Greeks, were born of this incestuous marriage.

OEGWA, a town of Africa, on the Gold Coast, standing, according to Artus on the brow of an eminence, rising gradually by a gentle ascent to a considerable height, and defended by rocks against which the waves beat with the utmost violence, the noise of which is heard at a great distance. Barbot affirms, that Oegwa contains above 500 houses, disjoined by narrow crooked streets; and that from the sea it has the appearance of an amphitheatre. Des Marchais reduces the number of houses to 200, in the centre of which stands a large square building, the repository of their gold dust and other commodities. The houses are built of earth and clay, but convenient

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venient, and well furnished with chairs, stools, mats, carpets, earthen pots, and even looking-glasses, which last they purchase from the Europeans. No part of the coast is better provided with all kinds of eatables, which are sent in from the adjacent cantons, and sold in public markets. Every thing is bought and sold with gold dust, which is the standard of all other commodities, and brought hither in great quantities from Fetu, Abrambo, Assiento, and Mandingo. The gold is sold by weight, and the quantity determined by nice scales, made in the country before it was frequented by the Europeans: a proof that those negroes are not ignorant of the refined principles of mechanics. Next to gold, the chief commerce of the place consists in the sale of fish, of which they catch prodigious quantities on the coast. Although the natives are brave and warlike, yet in time of peace no people are more industrious, their whole time being employed in catching fish or cultivating the soil. They are extremely expert in throwing the line, and fishing by the hook; nor is their intrepidity in pursuing their employments in all kinds of weather less astonishing. Every day in the week, except Wednesday, which is sacred to the Fetiche, they employ in their several occupations, and no season of the year is exempted from fishing. Their canoes weather storms which would endanger the largest shipping; and the negroes take advantage of those seasons which oblige others to discontinue their labours, by throwing their lines with equal success in tempestuous as in calm weather.

(1.) OEI, a town of China, in Chensi.

(2, 3.) OEI, a town and river of China, in Chantong.

* OEILIAD. *n. f.* [from *oeil*, French.] Glance; wink; token of the eye.—

She gave *oeiliads* and most speaking looks
To noble Edmund. *Shak. King Lear.*

OELAND, an island of Sweden, seated on the Baltic, between the continent of Gothland and the isle of Gothland. It lies between 56° and 57° Lat. N. and between 17° and 18° of Lon. E. It is about 60 miles long, and 15 broad; having a wholesome air, and a fertile soil, with rising hills, and several castles. It has about 7000 inhabitants, and is divided into four provostships. The soil is fertile. Borckholm is the capital.

OELFELDT, a town of Saxony, in Magdeburg, on the Aller; 25 miles E. of Brunswick. Lon. 11. 30. E. Lat. 52. 27. N.

OELPE, a town of Germany, in Berg.

(1.) OELS, a principality of Silesia, bounded on the S. by those of Oppeln, Brieg, and Breslau; W. by Wohlau, and N. and E. by Poland. The soil is sandy.

(2.) OELS, the capital of the above territory. It has a palace for the prince; with one Popish and two Lutheran churches. It was three times almost destroyed by fire; viz. in 1559 and 1730, by accidents; and in 1634, by the Imperialists. It is 14 miles ENE. of Breslau, and 22 N. of Brieg. Lon. 39. 14. E. Ferro. Lat. 51. 4. N.

OELSEN, a town of Saxony, in Meissen.

OELSNITZ, a town of Saxony, in Vogtland, 22 m. SW. of Dresden, and 20 SSW. of Zwickau.

OENANTHE, WATER DROPWORT, a genus of the digynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 45th order, *Umbellatæ*. The florets are difform; those of the disc sessile and barren; the fruit crowned with the calyx. There are 5 species; of which the most remarkable is the

OENANTHE CROCATA, or HEMLOCK DROPWORT, growing frequently on the banks of ditches, rivers, and lakes, in many parts of Britain. The root and leaves are strong poison; several persons have perished by eating it, through mistake, for water parsnips or for celery, which last it resembles pretty much in its leaves. Lobel calls this plant *œnanthe aquatica cicutæ facie*. It grows in great plenty all over Pembrokeshire, and is called by the inhabitants *five-fingered root*: it is much used by them, in cataplasms, for the *felon* or worst kind of whitlow. They eat some parts of it, but carefully avoid the roots and stalk. These indeed are most pernicious, and prove instantly fatal, unless a proper remedy is applied. This plant is so extremely like celery, and so apt to be mistaken for it, that it cannot be enough guarded against. In *Plate* CCXLVIII, X is the shape of the root; *a*, The part cut off from the stalk; *b*, A branch taken from the bottom of the stalk, where the leaves are largest; *c*, A top branch with the umbels of flowers; *d*, An anterior view of the flower in its natural size; *e*, A posterior view of the same; *f*, The anterior appearance of the flower through a microscope; *g*, The posterior view of the same; *h*, A view of the rudiments of the fruit after the decay of the flower; *i*, The same magnified; A * The shape of a leaf of *celery*; B, A leaf of parsley.—These two are printed, to prevent any unhappy mistake in eating the poisonous plant instead of either. We have added to the figures of this dangerous plant these leaves of celery and parsley, which, as we have said, it greatly resembles, in order to show our readers how careful they ought to be, in case of an accident because of this similarity.

OENE, an ancient town of Argolis.

OENEA, a river of Assyria. *Ammian.*

OENEGLIA. See ONEGLIA.

OENEUS, in fabulous history, a king of Calydonia in Ætolia, son of Parthaon, grandson of Neptune, and father of MELEAGER, TYDEUS, DEJANIRA, &c. (See these articles.) He was driven from his throne by the sons of his brother Agrius, but restored by his grandson DIOMEDES, and died at OENE.

OENKJE, a species of iris. See IRIS, N° 3.

OENOE. See OENE, and OENONA.

OENOMAUS, in fabulous history, the son of Mars by Sterope, the daughter of Atlas, and father of Hippodamia the wife of Pelops. See PELOPS.

(1.) OENONA, the ancient name of ÆGINA.

(2, 3.) OENONA, or OENOE, 2 towns of Attica.

OENONE, a nymph of Mount Ida, daughter of the Cebrenus, and wife of Paris, before he was known to be the son of K. Priam. Being endued with the spirit of prophecy, she foretold to him, that his voyage to Greece would be attended with the ruin of his family and country; and that

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that he would return to her for aid at the hour of his death: all which happened, and Oenone killed herſelf on his body. See PARIS, N° I.

OENOPIA, an ancient name of ÆGINA.

OENOPION, king of Chios, a ſon of Theſeus and Ariadne. See ORION, N° 2.

OENOPTÆ, in Grecian antiquity, a kind of cenſors at Athens, who regulated entertainments, and took care that none drank too much, nor too little.

OENOS, [from Οινος, *vinum*, wine,] in ornithology, the name uſed by authors for the ſtock-dove, or wood-pigeon, called alſo by ſome VINAGO, from its wine colour; ſomewhat larger than the common pigeon, but of the ſame ſhape and general colour. Its neck is of a fine changeable hue, as differently oppoſed to the light; and its breaſt, ſhoulders, and wings, are of a fine purpliſh hue, or red wine colour. Its legs are red, and feathered a little below the joint. See COLUMBA, N° 1. § 4.

OENOTHERA, TREE PRIMROSE, a genus of the monogynia order, belonging to the octandria claſs of plants; and in the natural method ranking under the 17th order, *Calycanthemæ*. The calyx is quadrifid; the petals 4; the capſule cylindric beneath; the ſeeds naked. There are 7 ſpecies; the moſt remarkable are theſe:

1. OENOTHERA BIENNIS, the common biennial tree primroſe, hath a long, thick, deeply ſtriking root; crowned with many large, oval, ſpear-ſhaped, plane, ſpreading leaves; upright, thick, firm, rough, hairy ſtems, riſing three or four feet high; garniſhed with long, narrow, lanceolate, cloſe-ſitting leaves, irregularly; and at all the axillas, from the middle upwards, large bright yellow flowers.

2. OENOTHERA FRUTICOSA, the ſhrubby, narrow-leaved, perennial tree primroſe, hath long thick roots; upright under-ſhrubby like red ſtems, two or three feet high: ſpear-ſhaped, lightly-indented leaves; and at the axillas pedunculated cluſters of yellow flowers, ſucceeded by pedicellated, acute-angled capſules.

3. OENOTHERA OCTOVALVIS, the eight-valved, ſmooth, biennial tree primroſe, hath upright, firm, ſomewhat hairy ſtems, riſing a yard high; oblong, ſpear-ſhaped, pointed, plane, ſmooth leaves; and at the axillas large bright yellow flowers.

4. OENOTHERA PUMILA, the low perennial tree primroſe, hath fibrous roots, crowned with many oval, ſpear-ſhaped, cloſe-ſitting leaves; ſlender herbaceous ſtems from 10 to 12 inches long; garniſhed with ſpear-ſhaped, blunt, ſmooth leaves, having very ſhort foot-ſtalks; and at the axillas ſmalliſh bright yellow flowers, ſucceeded by acute angled capſules.—All theſe plants flower very profuſely in June and July, coming out almoſt half the length of the ſtalks from the axillas; and as the ſtalk advances in ſtature, new flowers are produced, ſucceeding thoſe below; in which order the plants continue flowering from about midſummer till October: each flower is moderately large and conſpicuous, conſiſting of four plane petals, which with the calyx form a very long tube below, and ſpreading above, generally expand moſt towards the evening; and are ſucceeded by plenty of ſeed in autumn. Theſe plants are exotics from America; but are all very hardy, proſper in any common ſoil and ſituation, and have been long in the Engliſh gardens, eſpecially the three firſt ſorts; but the œnothera biennis is the moſt commonly known. They are proper to be employed as plants of ornament for embelliſhing the pleaſure garden; they may be placed anywhere, and will effect a very agreeable variety 3 or 4 months with their plentiful blow of flowers. The biennial kinds muſt be raiſed annually from ſeed, for they totally periſh after they have flowered. But the perennials, once raiſed, continue for years by the root. The propagation of all the ſorts is by ſeed, and the perennial alſo by parting the roots.

OENOTRI, the people of OENOTRIA. Theſe Oenotrians were called *Aborigines*; and after they had been engaged for many years in a war with the Siculi, entered into an alliance with a colony of the Pelaſgi, who came out of Theſſaly into Italy, after having been driven from the former country.

OENOTRIA, an ancient name of Italy; ſo called from the OENOTRI, (*Virgil*); who inhabited between Pæſtum and Tarentum (*Ovid*), originally Arcadians (*Dionyſius Halicarnaſſeus*), who came under the conduct of OENOTRUS, ſon of Lycaon, 17 generations before the war of Troy, or 459 years, at 27 years each generation, and gave name to the people. Cato derives the name from *Oenotrus*, king of the Sabines and Etruſcans: but Varro from *Oenotrus*, king of the Latins; and Servius from the Greek name for wine, for which Italy was famous; of which opinion is Strabo.

OENOTRIDES, two ſmall iſlands in the Tuſcan ſea, over againſt Velia, a town of Lucania, called *Pontia* and *Iſcia*; now *Penza* and *Iſchia*, on the coaſt of the Principato Citra, on the W. of Naples; ſo called from the OENOTRI. *Strabo. Pliny.*

OENOTRUS, the ſon of Lycaon, and 6th in deſcent from Phoroneus, the firſt king of Argos, who reigned about A.A.C. 1750, was the founder of the firſt Greek colony in Italy. See OENOTRIA.

OENUPHIS, an ancient Egyptian aſtronomer, and prieſt of On. See ON, N° 4.

OENUSÆ, iſlands near Chios. *Plin.* v. 31.

OEPEN, or EUPEN, a town of France, in the dep. of the Ourte, and ci-devant duchy of Limburg, on the Weze; famous for its cloth manufactures, which are ſaid to equal thoſe of England. It is 16 miles S. of Aix La Chapelle.

* O'ER. contracted from *over*. See OVER.—

And now the lovely face but half appears,
O'er-run with wrinkles and defac'd with tears.
Addiſon.

OERL, a town of France, in the dep. of the Roer, and late duchy of Pruſſian Gnelderland; 10 miles NW. of Venloo.

OERNETZ, a town of Sweden, in Dalecarlia, where the Great Guſtavus Vaſa took refuge; 5 miles S. of Fahlun.

OEROE, an iſland of Bœotia, formed by the Aſopus. *Herodot.* ix. c. 50.

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OERTZ, a river of Lower Saxony, which runs into the Allier, 4 miles W of Zell.

OESCH, or OEX, a town of Switzerland, in Berne; 19 miles S. of Friburg.

OESEL, an iſland of the Baltic ſea, at the entrance of the gulf of Livonia. It is about 70 miles in length, and 50 in breadth, and contains 10 pariſhes. It is defended by the fortreſſes of Arenſburg and Sonneburg. It lies between 22° and 24° Lon. E. and between 58° and 59° Lat. N.

(1.) * OESOPHAGUS. *n. ſ.* [from οισος, wicker, from ſome ſimilitude in the ſtructure of this part to the contexture of that; and φαγω to eat.] The gullet; a long, large, and round canal, that deſcends from the mouth, lying all along between the windpipe and the joints of the neck and back, to the fifth joint of the back, where it turns a little to the right, and gives way to the deſcending artery; and both run by one another, till at the ninth the *oeſophagus* turns again to the left, pierces the midriff, and is continued to the left orifice of the ſtomach. *Quincy.*—Wounds penetrating the *oeſophagus* and aſpera arteria require to be ſtitched cloſe, eſpecially thoſe of the *oeſophagus*, where the ſuſtenance and ſaliva ſo continually preſſeth into it. *Wiſeman's Surgery.*

(2.) OESOPHAGUS. See ANATOMY, *Index.*

OESTRICH. See ESTRICH, N° 3. By the laſt diviſion of the countries on the left banks of the Rhine, it is now in the dep. of the Rhine and Moſelle.

OESTRINGEN, a town of Germany, in the late biſhopric of Spire, now included in the French empire and department of Mont Tonnere; 14 miles E. of Spire.

OESTRUS, in zoology, a genus of inſects belonging to the order of diptera. It has no mouth; but three punctures, without trunk or beak: Antennæ taper, proceeding from a lenticular joint. See *Plate* 246. This is one of the moſt curious genera of inſects. They are diſtinguiſhed into ſeveral ſpecies, named from the different places wherein they depoſit their eggs. Some, knowing that their eggs cannot be hatched but under the ſkins of living creatures, ſuch as bulls, cows, reindeer, ſtags, and camels, fix upon them at the inſtant of laying their eggs. From the hinder part of their body iſſues a whimble of wonderful ſtructure. It is a ſcaly cylinder, compoſed of 4 tubes, which draw out like the pieces of a ſpying-glaſs; the laſt is armed with 3 hooks, and is the gimblet with which the œſtri bore through the tough hides of horned cattle. The animal ſeems to experience no pain from the puncture, unleſs the inſect, plunging too deep, attacks ſome nervous fibre; in which caſe, the beaſt runs about, and becomes furious. The eggs being hatched, the grub feeds on the matter of the wound. The place of its abode forms upon the body of the quadrupeds a bunch ſometimes above an inch high. When full grown, the larva breaks through the tumor, and ſlides down to the ground; for doing which, it takes the cool of the morning, that it may neither be overpowered by the heat of the day, nor chilled by the cold of the night: it then digs itſelf a burrow, into which it retires. Its ſkin grows hard, and turns to a very ſolid ſhell. There it is transformed to a chryſalis, and afterwards to a winged inſect. The ſhell wherein the œſtrus is incloſed, is of ſo ſtrong a texture, that it could not make its way out, if at one of the ends there were not a ſmall valve, faſtened only by a very ſlight filament. The firſt puſh the œſtrus makes, the door gives way, and the priſon opens. The inſect wings its way to woods and places frequented by cattle. There are 5 ſpecies, viz.

1. OESTRUS BOVIS, *the breeze* or GAD-FLY.—Thorax yellow, with a black tranſverſe line between the wings: Abdomen tawny, with fine black tranſverſe lines; laſt ſegment black: Wings white, with a brown tranſverſe line, and three brown ſpots. Size of the large blue fly. Depoſits its eggs under the ſkin on the backs of oxen, where the maggots are nouriſhed the whole winter till the month of June; and plague the cattle ſo all ſummer, that they are obliged to fly for refuge into the water, and dare not quit it the whole day.

2. OESTRUS HÆMORRHOIDALIS.—Body long, black, covered with tawny hair; middle of the thorax leſs hairy; wings immaculate; antennæ very ſhort: Length half an inch. Depoſits its eggs in the rectum of horſes, and occaſions them great torment. See BOTTS.

3. OESTRUS NASALIS.—Body black; but the head, thorax, and abdomen, covered with pale red hair, except the firſt ſegment of the latter, which is covered with white hair; the wings immaculate. Breeds in the fauces of horſes, entering by their noſe.

4. OESTRUS OVIS, *the grey fly.*—Spotted with black; front pale yellow; legs browniſh; wings with ſhort black veins; length half an inch. Breeds in the frontal ſinus of ſheep; where the maggots, hatched from the eggs, lodge the whole winter, vellicating the internal membranes, and often bringing on death.

5. OESTRUS TARANDI.—Thorax yellow; with a black line between the wings, which are immaculate: Abdomen tawny, laſt ſegment black. Inſeſt the back of the rein-deer, ſo as greatly to retard the breed. The rein-deer of Lapland are obliged every year to fly to the Alpine mountains, to eſcape the purſuit of theſe inſects; yet a fourth part of their number periſh by them at two years old; the reſt are emaciated, and have their ſkins ſpoiled.

(1.) OETA, in ancient geography, a mountain of Theſſaly, extending from Thermopylæ W. to the Sinus Ambracius and in ſome meaſure cutting at right angles the mountainous country ſtretching out between Parnaſſus on the S. and Pindus on the N. At Thermopylæ it is very rough and high, riſing and ending in ſharp and ſteep rocks, affording a narrow paſſage between it and the ſea from Theſſaly to Locris, (*Strabo,*) with two paths over it; the one above Trachis, very ſteep and high; the other through the country of the Ænianes, much eaſier and readier for travellers; by this it was that Leonidas was attacked in rear by the Perſians. (*Pauſanias*). Here Hercules laid himſelf on the funeral pile; (*Silius Italicus, Ovid*); the ſpot thence called PYRA, according to Livy, who ſays, that the extreme mountains to the E. are called *Oeta*; and hence the

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the poets allege, that day, night, fun, and ſtars, aroſe from Oeta, (*Seneca, Statius, Silius Italicus, Catullus, Virgil's Culex*)—circumſtances which ſhow the height of this mountain. It is now called *Banina*.

(1.) OETA, a town near Thermopylæ, at the foot of the above mountain.

OETEROA. See OHETEROA.

(1.) OETING, a town of Germany, in Upper Bavaria, under the juriſdiction of Burkhauſen. It is divided into the upper and the lower town, and ſeated on the Inn, 8 miles W. of Burkhauſen. There is a great reſort of pilgrims to the old chapel. Lon. 12. 47. E. Lat. 48. 0. N.

(2.) OETING, a county of Germany, in the circle of Suabia, bounded on the N. and E. by Franconia, S. by the duchy of Neuburg, and W. by that of Wirtemberg. It is about 40 miles from E. to W. and 20 from N. to S.

(3.) OETING, or OETINGEN, } the capital of the above county, is ſeated on the Wirnizt; 14 miles S. of Anſpach, and 16 NW. of Donawert. Lon. 10. 45. E. Lat. 48. 52. N.

OETSKAIA, a town of Ruſſia, in Irkutſk, 40 miles N. of Irkutſk.

OETTING, or OETTINGEN. } See OETING, N° 1, 2, and 3.

OETYLUM, or OETYLUS, } an ancient town of Laconia, in which Serapis had a temple. *Pauſan.* iii. 25.

OEUIL, a river of France, which runs into the Cher, in the department of the Allier.

OEX. See OESCH.

(1.) OEYRAS, a town of Portugal, in Eſtremadura, on the Tagus; 8 miles W. of Liſbon.

(2.) OEYRAS, NEW, a town of Africa, in Angola.

OEZEL. See OESEL.

* OF. *prep.* [*of*, Saxon.] 1. It is put before the ſubſtantive that follows another in conſtruction; as, *of theſe part were ſlain*; that is, *part of theſe*.—

I cannot inſtantly raiſe up the groſs
Of full three thouſand ducats. *Shak.*

—He to his natural endowments *of* a large invention, a ripe judgment, and a ſtrong memory, has joined the knowledge *of* the liberal arts. *Dryden.* —All men naturally fly to God in extremity; and the moſt atheiſtical perſon in the world, when forſaken of all hopes *of* any other relief, is forced to acknowledge him. *Tillotſon.*—The rouſing *of* the mind with ſome degrees of vigour, does ſet it free from thoſe idle companions. *Locke.*—The value *of* land is raiſed only by a greater plenty of money. *Locke.*—They will receive it at laſt with an ample accumulation *of* intereſt. *Smallridge.* 2. It is put after ſuperlative adjectives.—The moſt renowned *of* all are thoſe to whom the name is given Philippinæ. *Abbot's Deſcription of the World.* —We profeſs to be animated with the beſt hopes *of* any men in the world, *Tillotſon.*—At midnight, the moſt diſmal and unſeaſonable time *of* all others, all thoſe virgins aroſe and trimmed their lamps. *Tillotſon.*—We are not to deſcribe our ſhepherds as ſhepherds at this day really are, but as they may be conceived then to have been, when the beſt *of* men followed the employment. *Pope.*—Peace, *of* all worldly bleſſings, is the moſt valuable. *Smallr.* 3. From.—The captain of the Helots, with a blow whoſe violence grew *of* fury, not *of* ſtrength, or *of* ſtrength proceeding *of* fury, ſtruck Palladius upon the ſide of the head. *Sidney.*—

One that I brought up *of* a puppy. *Shak.*

—He borrowed a box of the ear *of* the Engliſhman, and ſwore he would pay him again when he was able. *Shak.*—It was called Corcyra, *of* Corcyra the daughter of Æſopus. *Sandys's Travels.* 4. Concerning; relating to.—

The quarrel is not now *of* fame and tribute,
Or *of* wrongs done unto confederates,
But for your own republick. *Ben Jonſon.*

—This cannot be underſtood *of* the firſt diſpoſition of the waters, as they were before the flood. *Burnet.*—All have this ſenſe *of* war. *Smallridge.* 5. Out of.—

Yet *of* this little he had ſome to ſpare,
To feed the famiſh'd, and to clothe the bare.
Dryden.

Look once again, and for thy huſband loſt,
Lo, all that's left *of* him, thy huſband's ghoſt.
Dryden.

6. Among.—He is the only perſon *of* all others for an epic poem. *Dryden.*—

Of all our heroes thou canſt boaſt alone,
That Jove, whene'er he thunders, calls thee ſon.
Dryden.

—Neither can I call to mind any clergyman *of* my own acquaintance who is wholly exempt from this error. *Swift.* 7. By. This ſenſe was once very frequent, but is not now in uſe.—

She dying
Shall be lamented, pitied, and excus'd
Of every bearer. *Shak.*

Though great ſtates by her ſupport do ſtand,
Yet ſhe herſelf ſupported is *of* none. *Davies.*

—I was friendly entertained *of* the Engliſh conſul. *Sandys.*—Left a more honourable man than thoſe be bidden *of* him. *Nelſon's Feſtivals.* 8. According to.—

The ſenate
And people of Rome, *of* their accuſtom'd greatneſs,
Will ſharply and ſeverely vindicate
Not only any fact, but any practice
Againſt the ſtate. *Ben Jonſon's Catiline.*

—They do *of* right belong to you. *Tillotſon's Dedication.*—

Tancred, whoſe delight
Was plac'd in his fair daughter's daily ſight,
Of cuſtom, when his ſtate affairs were done,
Would paſs his pleaſing hours with her alone.
Dryden.

9. Noting power, ability, choice, or ſpontaneity; with the reciprocal pronoun.—Some ſoils put forth odorate herbs *of* themſelves; as wild thyme. *Bacon's Nat. Hiſt.*—*Of* himſelf man is confeſſedly unequal to his duty. *Steph.*—The Venice glaſſes would crack *of* themſelves. *Boyle.*—

Of himſelf is none,
But that eternal infinite and one,
Who never did begin, who ne'er can end.
Dryden.

The thirſty cattle *of* themſelves abſtain'd
From water, and their graſſy fare diſdain'd.
Dryden.

—To aſſert mankind to have been *of* himſelf, and

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without a cauſe, hath this invincible objection againſt it, that we plainly ſee every man to be from another. *Tillotſon.*—No bodies can either move *of* themſelves, or *of* themſelves alter the direction of their motion. *Cheyne.*—A free people, as ſoon as they fall into any acts of civil ſociety, do *of* themſelves divide into three powers. *Swift.*—

Howe'er, it was civil in angel or elf;
For he ne'er could have fill'd it ſo well *of* himſelf. *Swift.*

10. Noting properties, qualities, or condition.—He was a man *of* a decayed fortune, and *of* no good education. *Clarendon.*—The colour of a body may be changed by a liquor which of itſelf is *of* no colour, provided it be ſaline. *Boyle.*—

The freſh eglantine exhal'd a breath,
Whoſe odours were *of* pow'r to raiſe from death. *Dryden.*

—A man may ſuſpend the act of his choice from being determined for or againſt the thing propoſed, till he has examined whether it be really *of* a nature, in itſelf and conſequences, to make him happy or no. *Locke.*—The value of land is raiſed, when, remaining *of* the ſame fertility, it comes to yield more rent. *Locke.* 11. Noting extraction.—Lunsford was a man *of* an ancient family in Suſſex. *Clar.*—Mr Rowe was born *of* an ancient family in Devonſhire. *Rowe's Life.* 12. Noting adherence, or belonging.—

Tubal, a wealthy Hebrew *of* my tribe,
Will furniſh me. *Shak. Merch. of Venice.*
Pray that in towns and temples *of* our own,
The name of great Anchiſes may be known. *Dryden.*

13. Noting the matter of any thing.—The chariot was all *of* cedar, gilt, and adorned with cryſtal, ſave that the fore end had pannels *of* ſapphires ſet in borders *of* gold, and the hinder end the like *of* emeralds of the Peru colour. *Bacon's New Atlantis.*—The common materials which the ancients made their ſhips *of*, were the wild aſh, the evergreen oak, the beech, and the alder. *Arbuthnot on Coins.* 14. Noting the motive.—It was not *of* my own choice I undertook this work. *Dryden.*—

Of his grace and inborn clemency,
He modifies his firſt ſevere decree. *Dryden.*

15. Noting form or manner of exiſtence.—As if our Lord had not left *of* his own framing, one which might remain as a part of the church liturgy, and ſerve as a pattern whereby to frame all other prayers with efficacy, yet without ſuperfluity of words. *Hooker.* 16. Noting ſomething that has ſome particular quality.—Mother, ſays the thruſh, never had any ſuch a friend as I have *of* this ſwallow. No, ſays ſhe, nor ever mother ſuch a fool as I have *of* this ſame thruſh. *L'Eſtrange.* 17. Noting faculties of power granted.—If any man miniſter, let him do it as *of* the ability which God giveth. 1 *Peter* iv. 11. 18. Noting preference or poſtponence.—

Your highneſs ſhall repoſe you at the Tower.
—I do not like the Tower *of* any place. *Shak.*

19. Noting change of one ſtate to another.—

O miſerable *of* happy! is this the end
Of this new glorious world, and me ſo late
The glory of that glory, who now become
Accurs'd *of* bleſſed? *Milt. Par. Loſt.*

20. Noting caſuality.—Good nature, by which I mean beneficence and candour, is the product of right reaſon; which *of* neceſſity will give allowance to the failures of others, by conſidering that there is nothing perfect in mankind. *Dryden.* 21. Noting proportion.—How many are there *of* an hundred, even amongſt ſcholars themſelves. *Locke.* 22. Noting kind or ſpecies.—To cultivate the advantages of ſucceſs, is an affair *of* the cabinet. *Swift.* 23. It is put before an indefinite expreſſion of time: as, *of* late, in late times; *of* old, in old time.—*Of* late, divers learned men have adopted the three hypoſtatical principles. *Boyle.*—

In days *of* old there liv'd, of mighty fame,
A valiant prince, and Theſeus was his name. *Dryden.*

OFANTO. See OFFANTO.

OFESCA, a town of Servia, on the N. bank of the Danube, oppoſite Belgrade.

(1.) * OFF. *adv.* [*af*, Dutch.] 1. Of this adverb the chief uſe is to conjoin it with verbs: as, to *come off*; to *fly off*; which are found under the verbs. 2. It is generally oppoſed to *on*: as, to lay *on*; to take *off*. In this caſe it ſignifies diſunion; ſeparation; breach of continuity.—Since the wiſdom of their choice is rather to have my cap than my heart, I will practiſe the inſinuating nod, and be *off* to them moſt counterfeitly. *Shak.*—Where are you, Sir John? Come, *off* with your boots. *Shak.*—

See
The lurking gold upon the fatal tree;
Then rend it *off*. *Dryden.*

—A piece of ſilver coined for a ſhilling, that has half the ſilver clipped *off*, is no more a ſhilling than a piece of wood, which was once a ſealed yard, is ſtill a yard, when one half of it is broke *off*. *Locke.* 3. It ſignifies diſtance.—

Weſt of this foreſt, ſcarcely *off* a mile,
In goodly form comes on the enemy. *Shak.*

—About thirty paces *off* were placed harquebuſiers. *Knolles.* 4. In painting or ſtatuary it ſignifies projection or relief.—This comes *off* well and excellent. *Shak.* 5. It ſignifies evaneſcence; abſence or departure.—Competitions intermit, and go *off* and on as it happens, upon this or that occaſion. *L'Eſtrange.* 6. It ſignifies any kind of diſappointment; defeat; interruption; adverſe diviſion: as, the affair is *off*; the match is *off*. 7. On the oppoſite ſide of a queſtion.—The queſtions no way touch upon puritaniſm, either *off* or on. *Sanderſon.* 8. From; not toward.—Philoclea gave herſelf to be ſeen unto her with ſuch a lightening of beauty upon Zelmane, that neither ſhe could look *on*, nor would look *off*. *Sidney.* 9. *Off* hand; not ſtudied.—Several ſtarts of fancy *off* hand look well enough. *L'Eſtrange.* 10. *To be off.* In common talk, ſignifies to recede from an intended contract or deſign. 11. *To come off.* To eſcape by ſome accident or ſubterfuge. 12. *To get off.* To make eſcape. 13. *To go off.* To deſert; to abandon. 14. *To go off.* Applied to guns, to take fire and be diſcharged; borrowed from the arrow and bow. 15. *Well* or *ill off.* Having good or bad ſucceſs. 16. *Off*, whether alone or in compoſition, means, either literally or figuratively, diſjunction, abſence, privation, or diſtance.

(2.) * OFF. *interj.* An expreſſion of abhorrence,

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rence, or command to depart.—*Off!* or fly for ever from thy sight. *Smith.*

(3.) * OFF. *prep.* 1. Not on.—Finding it grow violent I burnt it, and felt no more after the third time; was never *off* my legs, nor kept my chamber a day. *Temple.* 2. Distant from.—Cicero's Tusculum was at a place called Grotto Ferrate, about two miles *off* this town, though most of the modern writers have fixed it to Frescati. *Addison.*

OFFA, or UFFA, an Anglo-Saxon monarch. K. of Mercia, who succeeded Ethelbald, A. D. 755. He treacherously murdered Ethelbert, K. of the East Angles, and took possession of his kingdom. As an atonement he gave the 10th of his goods to the poor, went on a pilgrimage to Rome, instituted the tax called *Peter Pence*, and built the monastery at St Alban's. He also erected the wall which bears his name. See ENGLAND, § 13. He died in 794.

* OFFAL. *n. s.* [*off fall*, says *Skinner*, that which falls from the table; perhaps from *offa*, Lat.] 1. Waste meat; that which is not eaten at the table. —He let out the *offals* of his meat to interest. *Arbuthnot.* 2. Carrion; coarse flesh.—

I should have fatted all the region kites
With this slave's *offal*. *Shak.*
Cram'd, and gorg'd nigh burst,
With suck'd and glutted *offal*. *Milt.*

3. Refuse; that which is thrown away as of no value.—God would not accept the *offals* of other professions. *South.*—

The fool is to his own cast *offals* kind. *Dryd.*
—They commonly fat hogs with *offal* corns. *Mort.*
4. Any thing of no esteem.—

What trash is Rome? what rubbish and what *offal*? *Shak.*

OFFANENGO, an ancient town of Italy, in the dep. of the Upper Po, district of Crema, and late territory of Cremasco. It is seated near several canals on the road to Brescia, and contained 1200 citizens in 1797.

OFFANTO, a river of Naples, which rises in the Appenine mountains, in Principato Ultra; and passing by Conza and Monte Verde, separates Capitanata from Basilicata and Perra-di Barri, and then falls into the Gulph of Venice, near Salpe.

OFFA'S DYKES, an entrenchment cast up by Offa, a Saxon king, to defend England against the incursions of the Welch. It runs through Herefordshire, Shropshire, Montgomeryshire, Denbighshire, and Flintshire.

OFFELING, a town of Austria, 16 miles SW. of Freyberg.

(1.) OFFENBACH, a town of Germany, in the circle of the Upper Rhine, and county of Isenburg on the Maine, containing two protestant churches, a synagogue and several manufactories: 5 miles E. of Francfort, and 12 NE. of Darmstadt. Lon. 8. 45 E. Lat. 42. 53. N.

(2.) OFFENBACH, a town of Germany, in the late county of Salm, now included in the French empire and department of Mont Tonnere, seated on the Glan, 4 miles NE. of Lautereck, and 33 WNW. of Worms.

OFFENBOURG, or OFFENBURG, a town of Germany, in Suabia, formerly imperial, in the Ortenau, seated on the Kinzig, 12 miles SE. of Strasburg, and 28 S. of Baden. It was taken by the French under Gen. Ferinet, on the 28th June 1796. By Bonaparte's decision of the long contested indemnities, this town was allotted to the Margrave of Baden, 21st Aug. 1802.

(1.) * OFFENCE. *n. s.* [*offense*, French, *offensa*, from *offendo*, Lat.] 1. Crime; act of wickedness.

Christ the Lord for our *offences* died. *Fairf.*
Thou hast stolen that, which after some few hours
Were thine without *offence*. *Shak.*

2. A transgression.—If by the law of nature, every man hath not a power to punish *offences* against it, I see not how the magistrates of any community can punish an alien of another country. *Locke.* 3. Injury.—I have given my opinion against the authority of two great men, but, I hope, without *offence* to their memories. *Dryden.* 4. Displeasure given; cause of disgust; scandal.—Giving no *offence* in any thing. 2 *Cor.* vi. 3.—He remembered the injury of the children of Beau, who had been a snare and an *offence* unto the people. 1 *Mac.* iv.—As the pains of the touch are greater than the *offences* of other senses, so likewise are the pleasures. *Bacon.*—By great and scandalous *offences*, we may incur the censure of the church. *Pearson.* 5. Anger; displeasure conceived. —He was content to give them just cause of *offence* when they had power to take just revenge. *Sidney.* 6. Attack; act of the assailant.—Courtesy, that seemed incorporated in his heart, would not be persuaded to offer any *offence*. *Sidney.*—

I have equal skill in all the weapons of *offence*.
Richardson.

(2.) OFFENCE, in law, is an act committed against the law, or omitted where the law requires it.

* OFFENCEFUL. *adj.* [*offence* and *full.*] Injurious; giving displeasure.—

It seems your most *offenceful* act
Was mutually committed. *Shak.*

* OFFENCELESS. *adj.* [from *offence.*] Unoffending; innocent.—A punishment more in policy than in malice; even so as one would beat his *offenceless* dog to affright an imperious lion. *Shak.*

(1.) * *To* OFFEND. *v. a.* [*offendo*, Latin.] 1. To make angry; to displease.—

If much you note him
You shall *offend* him. *Shak. Macbeth.*

—Three sorts of men my soul hateth, and I am greatly *offended* at their life. *Eccluf.* xxv. 2.—The emperor himself came running to the place in his armour, grievously *offended* with them who had kept such negligent watch. *Knolles's History of the Turks.*—The indiscreet and dangerous use of innocent and lawful things, as it does not shock and *offend* our consciences, so it is difficult to make people at all sensible of the danger of it. *Law.* 2. To assail; to attack.—He was fain to defend himself, and withal so to *offend* him, that by an unlucky blow the poor Philoxenus fell dead at his feet. 3. To transgress; to violate. *Sidney.*—

Many fear
More to *offend* the law. *Ballad.*

4. To injure.—

Cheaply you sin, and punish crimes with ease,
Not as th' *offended*, but th' offenders please.
Dryden.

* (2.) *To*

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(2.)* *To* OFFEND. *v. n.* 1. To be criminal; to tranſgreſs the law.—This man that of earthly matter maketh graven images, knoweth himſelf to *offend* above all others. *Wiſd.* xiv. 13.—Whoſoever ſhall keep the whole law, and yet *offend* in one point, he is guilty of all. *James*, ii. 10.—The biſhops therefore of the church of England, did noways *offend* by receiving from the Roman church into our divine ſervice ſuch materials, circumſtances or ceremonies as were religious and good. *White.* 2. To cauſe anger.—I ſhall *offend*, either to detain or to give it. *Shak.* 3. To commit tranſgreſſion; with *againſt*.—Our language is extremely imperfect, and in many inſtances it *offends againſt* every part of grammar. *Swift.*

* OFFENDER. *n. ſ.* [from *To offend.*] 1. A criminal; one who has committed a crime; a tranſgreſſor; a guilty perſon.—All that watch for iniquity are cut off, that make a man an *offender* for a word. *If* xxix. 21.—Every actual ſin, beſides the three former, muſt be conſidered with a fourth thing, to wit, a certain ſtain or blot which it imprints and leaves in the *offender*. *Perkins.*

So like a fly the poor *offender* dies;
But like the waſp, the rich eſcapes and flies.
Denham.

How ſhall I loſe the ſin, yet keep the ſenſe,
And love th' *offender*, yet deteſt th' offence?
Pope.

—The conſcience of the *offender* ſhall be ſharper than an avenger's ſword. *Clariſſa.*—It is the greateſt puniſhment the governors of the church can lay upon the worſt *offender*. *Duty of Man.* 2. One who has done an injury.—

All vengeance comes too ſhort,
Which can purſue th' *offender*. *Shak.*

* OFFENDRESS. *n. ſ.* [from *offender.*] A woman that offends.—Virginity murthers itſelf, and ſhould be buried in highways out of all ſanctified limit, as a deſperate *offendreſs* againſt nature. *Shak.*

* OFFENSIVE. *adj.* [*offenſif*, Fr. from *offenſus*, Lat.] 1. Cauſing anger; diſpleaſing; diſguſting.—If that which we do to pleaſe God moſt, be, for the manifold defects thereof, *offenſive* unto him. *Hooker.*—It ſhall ſuffice, to touch ſuch cuſtoms of the Iriſh as ſeem *offenſive* and repugnant to good government. *Spenſer.* 2. Cauſing pain; injurious.—It is an excellent opener for the liver, but *offenſive* to the ſtomach. *Bacon.*—The ſun was in Cancer, in the hotteſt time of the year, and the heat was very *offenſive* to me. *Brown.*—Some particular acrimony in the ſtomach ſometimes makes it *offenſive*. *Arbuthnot.* 3. Aſſailant; not defenſive.—He recounted the benefits and favours that he had done him, in provoking a mighty and opulent king by an *offenſive* war in his quarrel. *Bacon.* We enquire concerning the advantages and diſadvantages betwixt thoſe military *offenſive* engines uſed among the ancients, and thoſe of theſe latter ages. *Wilkins.*—Avoiding the defenſive part, where the main ſtreſs lies, and keeping themſelves chiefly to the *offenſive*. *Waterland.*

* OFFENSIVELY. *adv.* [from *offenſive.*] 1. Miſchievouſly; injuriouſly.—In the leaſt thing done *offenſively* againſt the good of men, we plainly ſhew, that we do not acknowledge God to be ſuch as indeed he is, *Hooker.* 2. So as to cauſe uneaſineſs or diſpleaſure.—A lady had her ſight diſordered, ſo that the images in her hangings did appear to her, if the room were not extraordinarily darkened, embelliſhed with ſeveral *offenſively* vivid colours. *Boyle.* 3. By way of attack; not defenſively.

* OFFENSIVENESS. *n. ſ.* [from *offenſive.*] 1. Injuriouſneſs; miſchief. 2. Cauſe of diſguſt.—All the motions of the parts might be explicated with the greateſt eaſe and without any *offenſiveneſs*. *Grew.*

* OFFER. *n. ſ.* [*offre*, Fr. from the verb.] 1. Propoſal of advantage to another.—

Theſe ſwell their proſpects, and exalt their pride,
When *offers* are diſdain'd, and love deny'd. *Pope.*

2. Firſt advance.—

Force compels this *offer*,
And it proceeds from policy, not love.—
—Mowbray, you overween to take it ſo;
This *offer* comes from mercy, not from fear.
Shak.

What wouldſt beg, Laertes,
That ſhall not be my *offer*, not thy aſking? *Shak.*

3. Propoſal made.—

The *offers* he doth make,
Were not for him to give, nor them to take.
Daniel.

—I enjoined all the ladies to tell the company, in caſe they had been in the ſiege, and had the ſame *offer* made them as the good women of that place, what every one of them would have brought off with her, and have thought moſt worth the ſaving. *Addiſon.*—It carries too great an imputation of ignorance, or folly, to quit and renounce former tenets upon the *offer* of an argument which cannot immediately be anſwered. *Locke.*—The Arians, Eunomians and Macedonians, were then formally and ſolemnly challenged by the Catholicks, to refer the matter in diſpute to the concurring judgment of the writers that lived before the controverſy began; but they declined the *offer*. *Waterland.* 4. Price bid; act of bidding a price.—

When ſtock is high, they come between,
Making by ſecond hand their *offers*;
Then cunningly retire unſeen,
With each a million in his coffers. *Swift.*

5. Attempt; endeavour.—Many motions are *offers* of nature, and cauſe motions by conſent; as in groaning, or crying upon pain. *Bacon.*—It is in the power of every one to make ſome eſſay, ſome *offer* and attempt, ſo as to ſhew that the heart is not idle or inſenſible. *South.* One ſees in it a kind of *offer* at modern architecture. *Addiſon.* 6. Something given by way of acknowledgement.—Fair ſtreams, that do vouchſafe in your clearneſs to repreſent unto me my blubbered face, let the tribute *offer* of my tears procure your ſtay awhile with me. *Sidney*

(1.)* *To* OFFER *v. a.* [*offero*, Lat. *offrir*, Fr.] 1. To preſent; to exhibit any thing ſo as that it may be taken or received.—Some ideas forwardly *offer* themſelves to all men's underſtandings. *Locke.*—Servants, placing happineſs in ſtrong drink, make court to my young maſter, by *offering* him that which they love. *Locke.*—The heathen women under the Mogul, *offer* themſelves to the flames at the death of their huſbands. *Collier.* 2. To ſacrifice; to immolate; to preſent as an act of worſhip

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ſhip: often with *up*, emphatical.—They *offered* unto the Lord of the ſpoil which they had brought, ſeven hundred oxen. 2. *Chron.* xv. 11.—An holy prieſthood to *offer up* ſpiritual ſacrifices. 1 *Pet.* ii. 5.—

Whole herds of *offer'd* bulls about the fire,
And briſtled boars and woolly ſheep expire.
Dryden.

—When a man is call'd upon to *offer up* himſelf to his conſcience, and to reſign to juſtice and truth, he ſhould thank God for the honour. *Collier.* 3. To bid as a price or reward.—

Nor, ſhould thou *offer* all thy little ſtore,
Will rich Iolas yield, but *offer* more. *Dryden.*

4. To attempt; to commence.—Lyſimachus armed about three thouſand men, and began firſt to *offer* violence. 2 *Mac.* iv. 40. 5. To propoſe.—In that extent wherein the mind wanders in remote ſpeculations, it ſtirs not one jot beyond thoſe ideas which ſenſe or reflection have *offered* for its contemplation. *Locke.*—Our author *offers* no reaſon. *Locke.*

(2.) * *To* OFFER. *v. n.* 1. To be preſent; to be at hand; to preſent itſelf.—

Th' occaſion *offers* and the youth complies.
Dryden.

2. To make an attempt.—No thought can imagine a greater heart to ſee and contemn danger, where danger would offer to make any wrongful threatning upon him. *Sidney.*—We came cloſe to the ſhore, and *offered* to land. *Bacon.*—

One *offers*, and in *off'ring* makes a ſtay. *Dan.*—I would treat the pope and his cardinals roughly, if they *offered* to ſee my wife without my leave. *Dryden.* 3. With *at*, to make an attempt.—I will not *offer at* that I cannot maſter. *Bacon.*—I hope they will take it well that I ſhould *offer at* a new thing. *Graunt.*—Guide him by ſhewing him by the motion of your own lips to *offer at* one of thoſe letters. *Holder.*—The maſquerade ſucceeded ſo well with him, that he would be *offering at* the ſhepherd's voice and call too. *L'Eſtrange.*—It contains the grounds of his doctrine, and *offers at* ſomewhat towards the diſproof of mine. *Atterbury.*—Without *offering at* any other remedy, we haſtily engaged in a war, which hath coſt us ſixty millions. *Swift.*

* OFFERER. *n. ſ.* [from *offer.*] 1. One who makes an offer.—

Bold *offerers*
Of ſuite and gifts to thy renowned wife.
Chapman.

2. One who ſacrifices, or dedicates in worſhip.—If the mind of the *offerer* be good, this is the only thing God reſpecteth. *Hooker.*—When he commanded Abraham to ſacrifice Iſaac, the place of the offering was not left undetermined, and to the *offerer's* diſcretion. *South.*

(1.)* OFFERING. *n. ſ.* [from *offer.*] A ſacrifice; any thing immolated, or offered in worſhip.—

Plucking the entrails of an *offering* forth,
They could not find a heart within the beaſt.
Shak.

They are polluted *offerings*, more abhorr'd
Than ſpotted livers in the ſacrifice. *Shak.*

—When thou ſhalt make his ſoul an *offering* for ſin, he ſhall ſee his ſeed. *If.* liii. 10.—

The gloomy god
Admir'd the deſtin'd *off'ring* to his queen. *Dryd.*

What nations now to Juno's pow'r will pray,
Or *off'ring* on my ſlighted altars lay? *Dryden.*

That my awaken'd ſoul may take her flight,
Renew'd in all her ſtrength, and freſh with life,
An *offering* fit for heaven. *Addiſon.*

Inferior *offerings* to thy god of vice
Are duly paid in fiddles, cards and dice. *Young.*

(2.) OFFERINGS, JEWISH. The Hebrews had ſeveral kinds of offerings, which they preſented at the temple. Some were free-will offerings, and others were of obligation. The FIRST-FRUITS; (ſee that article;) the tenths, the ſin-offerings, were of obligation; the peace offerings, vows, offerings of wine, oil, bread, ſalt, and other things, made to the temple or to the miniſters of the Lord, were offerings of devotion. The Hebrews called all offerings in general *corban.* But the offerings of bread, ſalt, fruits, and liquors, as wine and oil, which were preſented to the temple, they called *mincha.* The ſacrifices are not properly offerings, and are not commonly included under that name. See CORBAN, MINCHA, and SACRIFICE. The offerings of grain, meal, bread, cakes, fruits, wine, ſalt, and oil, were common in the temple. Sometimes theſe offerings were alone, and ſometimes they accompanied the ſacrifices. Honey was never offered with the ſacrifices; but it might be offered alone in the quality of the firſt fruits. Theſe were the rules that were obſerved in the preſenting of thoſe offerings, called in Hebrew *mincha* or *kerbon mincha*; in the Septuagint, *offerings of ſacrifice*; and the ſame by St Jerome, *oblationem ſacrificii*; but by our tranſlators, *meat offerings* (Lev. ii. 1. &c.) There were 5 ſorts of theſe offerings: 1. Fine flour or meal. 2. Cakes of ſeveral ſorts, baked in an oven. 3. Cakes baked upon a plate. 4. Another ſort of cakes, baked upon a gridiron, or plate with holes in it. 5. The firſt fruits of the new corn, which were offered either pure and without mixture, or roaſted or parched in the ear or out of the ear. The cakes were kneaded with olive oil, or fried with oil in a pan, or only dipped in oil after they were baked. The bread offered to be preſented upon the altar, was to be without leaven; for leaven was never offered upon the altar, nor with the ſacrifices: but they might make preſents of common bread to the prieſts and miniſters of the temple. (See CAKE, § 2.) The offerings now mentioned were appointed on account of the poorer ſort, who could not go to the charge of ſacrificing animals. Thoſe that offered only oblations of bread or of meal, offered alſo oil, incenſe, ſalt, and wine, which were in a manner the ſeaſoning of it. The prieſt in waiting received the offerings from the hand of him that offered them; laid a part of them upon the altar, and reſerved the reſt for his own ſubſiſtence, as his right. Nothing was burnt quite up but the incenſe, of which the prieſt kept back nothing for his own ſhare. When an Iſraelite offered a loaf to the prieſt, or a cake, the prieſt broke the loaf or cake into two parts, ſetting that part aſide that he reſerved to himſelf, and broke the other into crumbs; poured oil upon it, ſalt, wine, and incenſe; and ſpread the whole upon the

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the fire of the altar. If these offerings were accompanied by an animal for a sacrifice, it was all thrown upon the victim, to be consumed along with it. If the offerings were the ears of new corn, either wheat or barley, these ears were parched at the fire or in the flame, and rubbed in the hand, and then offered to the priest in a vessel; over which he put oil, incense, wine, and salt, and then burnt it upon the altar, first having taken as much of it as of right belonged to himself. The greatest part of these offerings were voluntary, and of pure devotion. But when an animal was offered in sacrifice, they were not at liberty to omit these offerings. Every thing was to be supplied that was to accompany the sacrifice, and which served as a seasoning to the victim. There are some cases in which the law requires only offerings of corn, or bread: for example, when they offered the first fruits of their harvest, whether they were offered solemnly by the whole nation, or by the devotion of private persons. As to the quantity of meal, oil, wine, or salt, which was to go along with the sacrifices, we do not find that the law determined it. The priest threw an handful of meal or crumbs upon the fire of of the altar, with wine, oil, and salt in proportion, and all the incense. All the rest belonged to him; the quantity depended upon the liberality of the offerer. Moses appoints an *Assaron*, or the *tenth* part of an ephah of meal, for those that had not wherewithal to offer the appointed sin-offerings. (Lev. v. 11. xiv. 21.) In the solemn offerings of the first fruits for the whole nation, they offered an entire sheaf of corn, a lamb of a year old, two tenths of fine meal mixed with oil, and a quarter of an hin of wine for the libation. (Lev. xxiii. 10, 11, 12, &c.) In the sacrifice of jealousy (Numb. v. 15.), when a jealous husband accused his wife of infidelity, the husband offered the tenth part of a satum of barley-meal, without oil or incense, because it was a sacrifice of jealousy, to discover whether his wife was guilty or not. The offerings of the fruits of the earth, of bread, of wine, oil, and salt, are the most ancient of any that have come to our knowledge. Cain offered to the Lord of the fruits of the earth, the first-fruits of his labour, (Gen. iv. 3, 4.); Abel offered the first-lings of his flocks, and of their fat. The heathen have nothing more ancient in their religion, than these sorts of offerings made to their gods. They offered clean wheat, flour, and bread.

(3.) OFFERINGS, PAGAN. See DRUIDS, § 11; LIBATION; MEXICO, § 4; MEXITLI; PRIMITIÆ, SACRIFICE, &c.

* OFFERTORY. *n. f.* [*offertoire*, French] The act of offering.—He went to St Paul's church, where he made *offertory* of his standards. *Bacon.* —The administration of the sacrament he reduced to an imitation, though a distant one, of primitive frequency, to once a month, and therewith its anciently inseparable appendant, the *offertory*. *Fell.*

* OFFERTURE. *n. f.* [from *offer*.] Offer; proposal of kindness. A word not in use.—Thou hast prevented us with *offertures* of thy love, even when were thine enemies. *King Charles.*

(1.) * OFFICE. *n. f.* [*office*, Fr. *officium*, Latin.] 1. A public charge or employment; magistracy.—

You have contriv'd to take
From Rome all season'd *office*, and to wind
Yourself into a power tyranical. *Shak.*
Methought this staff, mine *office*-badge in court,
Was broke in twain. *Shak.*
The insolence of *office*. *Shak.*

—Is it the magistrate's *office*, to hear causes or suits at law, and to decide them? *Kettlewarth.* 2. Agency; peculiar use.—

All things that you should use to do me wrong,
Deny their office. *Shak.*

—In this experiment the several intervals of the teeth of the comb do the *office* of so many prisms. *Newton.* 3. Business; particular employment.—

Hesperus, whose *office* is to bring
Twilight upon the earth. *Milton.*

4. Act of good or ill voluntarily tendered.—

Wolves and bears
Casting their savageness aside, have done
Like *offices* of pity. *Shak.*

—Mrs Ford, I see you are obsequious in your love, and I profess requital to a hair's breadth; not only in the simple *office* of love, but in all the accoustrement, complement, and ceremony of it. *Shak.*

I would I could do a good *office* between you. *Shak.*

—The wolf took occasion to do the fox a good *office*. *L'Estrange.*—

You who your pious *offices* employ,
To save the reliques of abandon'd Troy. *Dryd.*
This gate
Instructs you how t' adore the heavens, and bows you
To morning's holy *office*. *Shak.*

6. Formulary of devotions.—The Lord's prayer, the ten commandments, and the creed, is a very good *office* for them, if they are not fitted for more regular *offices*. *Taylor.* 7. Rooms in a house appropriated to particular business.—

What do we but draw anew the model
In fewer *offices*? *Shak.*

—Let *offices* stand at distance, with some low galleries to pass from them to the palace, *Bacon.* 8. [*Officina*, Lat. Place where business is transacted.—

Empty lodgings and unfurnish'd walls,
Unpeopled *offices*, untrodden stones? *Shak.*

—Empson and Dudley though they could not but hear of these scruples in the king's conscience, yet as if the king's soul and his money were in several *offices*, that the one was not to intermeddle with the other, went on with as great rage as ever. *Bacon.*—He had set up a kind of *office* of address; his general correspondencies by letters. *Fell.*

(2.) OFFICE (§ 1. *def.* 1, 3.) is primarily used in speaking of the offices of judicature and policy; as the office of secretary of state, the office of a sheriff, of a justice of peace, &c. See HONOUR, § 8, 11.

(3.) OFFICE, in architecture, (§ 1. *def.* 7.) denotes all the apartments appointed for the necessary occasions of a palace or great house; as kitchen, pantries, confectionaries, &c.

(4.) OFFICE,

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(4.) OFFICE, in the canon law, is uſed for a benefice that has no juriſdiction annexed to it.

(5.) OFFICES AND PENSIONS, DUTY UPON, a branch of the king's extraordinary perpetual revenue, conſiſting in a payment of 1s. in the pound (over and above all other duties) out of all ſalaries, fees, and perquiſites, of offices and penſions payable by the crown. This highly popular tax was impoſed by ſtat. 31 Geo. II. c. 22. and is under the direction of the commiſſioners of the land-tax.

* *To* OFFICE. *v. a.* [from the noun.] To perform; to diſcharge; to do.—

I will be gone, although
The air of Paradiſe did fan the houſe,
And angels *offic'd* all. *Shak.*

(1.) * OFFICER. *n. ſ.* [*officier*, French.] 1. A man employed by the public.—

'Tis an office of great worth,
And you an *officer* fit for the place: *Shak.*
Submit you to the people's voices,
All their *officers*, and be content
To ſuffer lawful cenſure. *Shak.*

—The next morning there came to us the ſame *officer* that came to us at firſt to conduct us to the ſtranger's houſe. *Bacon.* If it ſhould fall into the French hands, all the princes would return to be the ſeveral *officers* of his court. *Temple.*—As a magiſtrate or great *officer*, he locks himſelf up from all approaches. *South.*—Birds of prey are an emblem of rapacious *officers*. *L'Eſtrange.*—Since he has appointed *officers* to hear it, a ſuit at law in itſelf muſt needs be innocent. *Kettleworth.* 2. A commander in the army.—

His ſurly *officer* ne'er fail'd to crack
His knotty cudgel on his tougher back. *Dryd.*
I ſummon'd all my *officers* in haſte. *Dryden.*

—The bad diſpoſition he made in landing his men, ſhews him not only to be much inferior to Pompey as a ſea *officer*, but to have had little or no ſkill in that element. *Arbuthnot.* 3. One who has the power of apprehending criminals, or men accountable to the law.—

They dare not meet each other;
Each takes his fellow for an *officer*. *Shak.*
We charge you
To go with us unto the *officers*. *Shak.*

(2.) *An* OFFICER (§ 1. *def.* 1.) is a perſon poſſeſſed of a poſt or office. See OFFICE, § 2, 5.

(3.) OFFICERS, COMMISSIONED, are ſuch as are appointed by the king's commiſſion. Such are all from the general to the cornet and enſign inclusive. They are thus called in contradiſtinction to non-commiſſioned officers. See § 7. and 9.

(4.) OFFICERS, FLAG. See ADMIRAL, § 3—6; and FLAG, § 3.

(5.) OFFICERS, GENERAL, are thoſe whoſe command is not limited to a ſingle company, troop, or regiment, but extends to a body of forces compoſed of ſeveral regiments: ſuch are the general, lieutenant-general, major-general, and brigadier.

(6.) OFFICERS, GREAT, OF THE CROWN, are, the lord high-ſteward, the lord high-chancellor, the lord high-treaſurer, the lord high-preſident of the council, the lord privy ſeal, the lord-chamberlain, the lord high-conſtable, and the earl-marſhal; each of which ſee under its proper article.

(7.) OFFICERS, NON-COMMISSIONED, are ſerjeant-majors, quarter-maſter-ſerjeants, ſerjeants, corporals, drum and fife majors; who are nominated by their reſpective captains, and appointed by the commanding officers of regiments, and by them reduced without a court-martial.

(8.) OFFICERS OF THE HOUSEHOLD. See CHAMBERLAIN, § 4; and HOUSEHOLD, § 3.

(9.) OFFICERS, ORDERLY NON-COMMISSIONED, are thoſe who are orderly, or on duty, for that week; who, on hearing the drum beat for orders, are to repair to the place appointed to receive them, and to take down in writing, in the orderly book, what is dictated by the adjutant, or ſerjeant-major: they are then immediately to ſhow theſe orders to the officers of the company, and afterwards warn the men for duty.

(10.) OFFICERS, STAFF, are ſuch as, in the king's preſence, bear a white ſtaff or wand; and at other times, on their going abroad, have it carried before them by a footman bare-headed; ſuch are the lord-ſteward, lord-chamberlain, lord-treaſurer, &c. The white ſtaff is taken for a commiſſion; and, at the king's death, each of theſe officers breaks his ſtaff over the hearſe made for the king's body, and thus lays down his commiſſion, and diſcharges all his inferior officers.

(11.) OFFICERS, STAFF, in the army. See STAFF.

(12.) OFFICERS, SUBALTERN, are all who adminiſter juſtice in the name of ſubjects; as thoſe who act under the earl-marſhal, admiral, &c.

(13.) OFFICERS, SUBALTERN, in the army, are the lieutenants, cornets, enſigns, ſerjeants, and corporals.

* OFFICERED. *adj.* [from *officer*.] Commanded; ſupplied with commanders.—What could we expect from an army *officered* by Iriſh papiſts and outlaws? *Addiſon's Freeholder.*

(1.) * OFFICIAL. *adj.* [*official*, Fr. from *office*.] 1. Conducive; appropriate with regard to uſe.—In this animal are the guts, the ſtomach, and other parts *official* unto nutrition, which, were its aliment the empty reception of air, their proviſions had been ſuperfluous. *Brown.* 2. Pertaining to a publick charge.—

If the *official* marks inveſted, you
Anon do meet the ſenate. *Shak. Coriolanus.*

(2.) * OFFICIAL. *n. ſ.* *Official* is that perſon to whom the cognizance of cauſes is committed by ſuch as have eccleſiaſtical juriſdiction. *Ayliffe.*—A poor man found a prieſt over familiar with his wife; and becauſe he ſpake it abroad and could not prove it, the prieſt ſued him before the biſhop's *official* for defamation. *Camden.*

(3.) OFFICIAL is alſo a deputy appointed by an archdeacon as his aſſiſtant, who ſits as judge in the archdeacon's court.

(4.) OFFICIAL, in the canon law, an eccleſiaſtical judge, appointed by a biſhop, chapter, abbot, &c. with charge of the ſpiritual juriſdiction of the dioceſe.

* OFFICIALTY. *n. ſ.* [*officialité*, Fr. from *official*.] The charge or poſt of an official.—The office of an *officialty* to an archdeacon. *Ayliffe.*

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(1.) * *To* OFFICIATE. *v. a.* [from *office*.] To give, in conſequence of office.—

All her number'd ſtars that ſeem to rowl
Diurnal, merely to *officiate* light
Round this opaceous earth. *Milton.*

(2.) * *To* OFFICIATE. *v. n.* 1. To diſcharge an office, commonly in worſhip.—No miniſter *officiating* in the church, can with a good conſcience omit any part *Sanderſon.*—Who of the biſhops or prieſts that *officiate* at the altar, in the places of their ſepulchres, ever ſaid we offer to thee Peter or Paul? *Stillingfleet.*—To prove curates no ſervants, is to reſcue them from that contempt which they will certainly fall into under this notion; which, conſidering the number of perſons *officiating* this way, muſt be very prejudicial to religion. *Collier.* 2. To perform an office for another.

(1.) * OFFICINAL. *adj.* [from *officina*, a ſhop.] Uſed in a ſhop, or belonging to it: thus, *officinal* plants and drugs are thoſe uſed in the ſhops.

(2.) OFFICINAL, in pharmacy, is applied to ſuch medicines, whether ſimple or compound, as are required to be conſtantly kept in the apothecaries ſhops.

(3.) *The* OFFICINAL SIMPLES are appointed, among us, by the college of phyſicians, and the manner of making the compoſitions directed in their diſpenſatory. See PHARMACY.

* OFFICIOUS. *adj.* [*officieux*, Fr. *officioſus*, Lat.] 1. Kind; doing good offices.—

Yet not to earth are thoſe bright luminaries
Officious; but to thee, earth's habitant. *Milton.*

2. Importunely forward.—

You are too *officious*
In her behalf that ſcorns your ſervices. *Shak.*

—At Taunton they killed in fury an *officious* and eager commiſſioner for the ſubſidy. *Bacon's Henry VII.*—

Cato, perhaps
I'm too *officious*; but my forward cares
Would fain preſerve a life of ſo much value.
Addiſon.

* OFFICIOUSLY. *adv.* [from *officious*.] 1. Importunately forward.—

The moſt corrupt are moſt obſequious grown,
And thoſe they ſcorn'd *officiouſly* they own. *Dryd.*
Flattering crowds *officiouſly* appear,
To give themſelves, not you, an happy year.
Dryden.

2. Kindly; with unaſked kindneſs.—

Let thy goats *officiouſly* be nurſt,
And led to living ſtreams to quench their thirſt.
Dryden.

* OFFICIOUSNESS. *n. ſ.* [from *officious*.] 1. Forwardneſs of civility, or reſpect, or endeavour. Commonly in an ill ſenſe.—I ſhew my *officiouſneſs* by an offering, though I betray my poverty. *South.* 2. Service.—In whom is required underſtanding as in a man, courage and vivacity as in a lion, ſervice and miniſterial *officiouſneſs* as in the ox, and expedition as in the eagle. *Brown.*

OFFIDA, a town of Italy, in the marquiſate of Ancona; 6 miles NE. of Aſcoli, and 42 SSE. of Ancona.

OFFIN. See OFFING, § 2.

(1.) * OFFING. *n. ſ.* [from *off*.] The act of ſteering to a diſtance from the land.

(2.) OFFING, or OFFIN, in the ſea language, is that part of the ſea, a good diſtance from ſhore, where there is deep water, and no need of a pilot to conduct the ſhip: thus, if a ſhip from ſhore be ſeen ſailing out to ſeaward, they ſay, *ſhe ſtands for the offing;* and if a ſhip, having the ſhore near her, have another a good way without her, or towards the ſea, they ſay, *that ſhip is in the offing.*

OFFINGTON, a town of Berks, near Faringdon: 2. a village of Suſſex, near Terring.

OFFRA, a town of Africa, on the Slave Coaſt, where the Engliſh and Dutch have factories.

OFFRANVILLE, a town of France, in the dep. of the Lower Seine, 3 miles S. of Dieppe.

* OFFSCOURING. *n. ſ.* [*off* and *ſcour*.] Recrement; part rubbed away in cleaning any thing.—Thou haſt made us the *offſcouring* and refuſe in the midſt of the people. *Lam.* iii. 45.—Being accounted, as St Paul ſays, the very filth of the world, and the *offſcouring* of all things. *Kettlewell.*

(1.) * OFFSET. *n. ſ.* [*off* and *ſet*.] Sprout; ſhoot of a plant.—They are multiplied not only by the ſeed, but many alſo by the root, producing *offſets*, or creeping under ground. *Ray.*—Some plants are raiſed from any part of the root, others by *offſets*, and in others the branches ſet in the ground will take root. *Locke.*

(2.) OFF-SETS, in ſurveying, are perpendiculars let fall, and meaſuring from the ſtationary lines to the hedge, fence, or extremity of an incloſure.

* OFFSPRING. *n. ſ.* [*off* and *ſpring*.] 1. Propagation; generation.—That which cannot bereunto attain perſonally, doth ſeem to continue itſelf by *offſpring* and propagation. *Hooker.* 2. The thing propagated or generated; children; deſcendants.—

This was a charge that all his heirs did bind;
And all his *offſpring* grew corrupt. *Davies.*
To the gods alone
Our future *offſpring* and our wives are known.
Dryden.

—His principal actor is the ſon of a goddeſs, not to mention the *offſpring* of other deities. *Addiſon.* 3. Production of any kind.—

Though both fell before their hour,
Time on their *offſpring* hath no pow'r.
Denham.

* *To* OFFUSCATE. *v. a.* [*offuſco*, Latin; *offuſquer*, Fr.] To dim; to cloud; to darken.

* OFFUSCATION. *n. ſ.* [from *offuſcate*.] The act of darkening.

OFI, an ancient nation of Germany. *Tac.* 28.

OFORO KIAMEN, a poſt of Chineſe Tartary.

* OFT. *adv.* [*oft*, Saxon.] Often; frequently; not rarely; not ſeldom.—In priſons more frequent, in deaths *oft.* 2 *Cor.* ii. 23.—It is one part of true faith, which is *oft* miſtaken for the whole. *Hammond.*—

Favours to none, to all ſhe ſmiles extends,
Oft ſhe rejects, but never once offends. *Pope.*

* OFTEN. *adv.* [from *oft*, Saxon; in the comparative, oftener; ſuperlative, ofteneſt.] Oft; frequently; many times; not ſeldom.—

The queen that bore thee,
Oft'ner upon her knees than on her feet,
Died every day ſhe liv'd. *Shak. Macbeth.*

—Uſe a little wine for thy ſtomach's ſake, and thine

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thine *often* infirmities. 1 *Tim.* v. 23.—In journeying *often*, in perils in the wilderneſs. 2 *Cor.* xi. 26.

A luſty black-brow'd girl, with forehead broad and high,
That *often* had bewitcht the ſea gods with her eye. *Drayton.*

—Who does not more admire Cicero as an author, than as a conſul of Rome, and does not *oftener* talk of the celebrated writers of our own country in former ages, than of any among their contemporaries? *Addiſon's Freeholder.*

* OFTENTIMES. *adv.* [*often* and *times*. From the compoſition of this word it is reaſonable to believe, that *oft* was once an adjective, of which *often* was the plural; which ſeems retained in the phraſe *thine often infirmities*. See OFTEN.] Frequently; many times; often.—Is our faith in the bleſſed Trinity a matter needleſs to be ſo *oftentimes* mentioned? *Hooker.*—The difficulty was by what means they could ever arrive to places *oftentimes* ſo remote from the ocean. *Woodward.*—It is equally neceſſary that there ſhould be a future ſtate, to vindicate the juſtice of God, and ſolve the preſent irregularities of Providence, whether the beſt men be *oftentimes* only, or always the moſt miſerable. *Atterbury.*

* OFTTIMES. *adv.* [*oft* and *times*.] Frequently; often.—

Oftimes nothing profits more
Than ſelf-eſteem. *Milton's Paradiſe Loſt.*
Ofttimes before I hither did reſort. *Dryden.*

O. G. See OGEE.

OG. [עוג, Heb. i. e. a mock.] a king of Baſhan, of a moſt gigantic ſtature. His bedſtead was of iron, and was 9 cubits long, and 4 broad; which, according to ſome calculations, is 16 feet 5 inches long, and above 7 feet 3 inches broad. The learned Calmet, however, makes it only 15 feet 4 inches long, and 6 feet 10 inches broad. Wolfius makes Og more than 13 feet high. The Rabbis pretend, that he lived before the flood, and preſerved himſelf during the time of it, by hanging on the outſide of the ark and receiving food from Noah, &c. When he heard of the defeat of Sihon, king of the Amorites, by Moſes, he collected all his troops and attacked the Iſraelites at Edrei; but his numerous hoſt was routed, himſelf killed, and his country conquered. The Ammonites ſome time afterwards carried off his iron beſt-ſtead. Num. xxi. Deut. iii, 1.—14.

OGAO. See OGHAO.

OGBUCKTOE, a ſettlement on the E. coaſt of Labrador. Lon. 60. 0. W. Lat. 55. 55. N.

(1.) * OGEE. OGIVE. *n. ſ.* A ſort of moulding in architecture, conſiſting of a round and a hollow; almoſt in the form of an S, and is the ſame with what Vitruvius calls cima. Cima reverſa, is an *ogee* with the hollow downwards. *Harris.*

(2.) OGEE, O. G. or CYMA. See ARCHITECTURE, § 105, 107.

OGEECHEE, a river of Georgia, which riſes near the foot of the Apalachian Mountains, 18 miles S. of the Savannah, and after running a SE. courſe of above 200 miles, in a direction nearly parallel to the ALATAMAHA on the SW. and the Savannah on the NE. and paſſing by Lewiſville, Lexington, Georgetown, &c. falls into the Atlantic, at Hardwick, oppoſite the N. end of Oſſabaw iſland, 18 miles S. of the city of Savannah.

OGERSKOI, a town of Ruſſia, in Perm.

OGEVILLER, a town of France in the dep. of the Meurthe; 4½ miles SW. of Blamont, and 9 E. of Luneville.

OGGERSHEIM, a town of France, in the dep. of Mont Tonnere, and late palatinate of the Rhine; ſeated on the Rhine, 4 miles WNW. of Manheim, and 4 SSE. of Frankendal.

OGHAMS, *n. ſ.* a particular kind of ſteganography, or writing in cypher practiſed by the Iriſh; of which there were three kinds: The firſt was compoſed of certain lines and marks, which derived their power from their ſituation and poſition, as they ſtand in relation to one principal line over or under which they are placed, or through which they are drawn; the principal line is horizontal, and ſerveth for a rule or guide, whoſe upper part is called the left, and the under ſide the right: above, under, and through which line, the characters or marks are drawn, which ſtand in the place of vowels, conſonants, diphthongs, and triphthongs. Some authors have doubted the exiſtence of this ſpecies of writing in cypher, called *Ogham* among the Iriſh; but theſe doubts are perhaps ill-founded; for ſeveral MSS. in this character ſtill exiſt, from which Mr Atlle has given a plate of them.

OGHAO, an iſland in the S. Pacific Ocean, W. of Anamooka. See COOK, N° III, § 9.

OGILBY, John, an eminent writer, born in or near Edinburgh, 17th Nov. 1600. His father having ſpent his eſtate, and being priſoner in the King's Bench, could contribute little to his education; however, he obtained ſome knowledge in the Latin grammar, and afterwards ſo much money as to procure his father's diſcharge from priſon, and to bind himſelf an apprentice to a dancing-maſter in London; when, by his dexterity in his profeſſion, he obtained money to buy out the remainder of his time, and to ſet up for himſelf. But being afterwards appointed to dance in the D. of Buckingham's great maſk, he ſtrained a vein in the inſide of his leg, which occaſioned his being ever after ſomewhat lame. When Thomas E. of Strafford was made lord-lieutenant of Ireland, he was entertained as a dancing-maſter in his family, and made one of the earl's troop of guards; at which time he compoſed a humorous piece called the *Character of a Trooper*. He was ſoon after appointed maſter of the revels in Ireland, and built a theatre at Dublin. About the end of the war in England, he left Ireland, and, being ſhipwrecked, came to London in a neceſſitous condition; but ſoon after walked to Cambridge, where, being aſſiſted by ſeveral ſcholars, he became ſo complete a maſter of the Latin tongue, that in 1649, he publiſhed a tranſlation of Virgil. He ſoon after learned Greek; and in 1660 publiſhed, in folio, a tranſlation of Homer's Iliad, with Annotations. In 1662, he went into Ireland, where he was made maſter of the revels by patent. He then built another theatre in Dublin, which coſt him about 1000l. He publiſhed at London, in folio, a tranſlation of Homer's Odyſſey, with Annotations; and afterwards

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wards wrote two heroic poems, entitled, the *Ephesian Matron*, and the *Roman Slaves* He next composed *the Charolics*, an epic poem, in 12 books, in honour of king Charles I, but this was loft in the fire of London; when his houfe in White Friars was burnt down, and his whole fortune, except about 5l. deftroyed. He, however, got his houfe rebuilt, fet up a printing office, was appointed cofmographer and geographic printer, and printed feveral great works, tranflated or collected by himfelf and his affiftants, particularly his *Atlas*. He died in 1676

OGIVE. *n. f.* in architecture, an arch or branch of a Gothic vault; which, inftead of being circular, paffes diagonally from one angle to another and forms a crofs with the other arches. The middle, where the ogives crofs each other, is called the *key*; being cut in form of a rofe, or a *cul de lampe*. The members or mouldings of the ogives are called *nerves*, *branches*, or *reins*; and the arches which feparate the ogives, *double arches*.

* *To* OGLE. *v. a.* [*oogh*, an eye, Dutch.] To view with fide glances, as in fondnefs; or with a defign to be heeded.—

From their high fcaffold with a trumpet check,
And *ogling* all their audience, then they fpeak.
Dryden.

—Could they talk of the different afpects and conjunctions of planets, they need not be at the pains to comment upon *oglings* and clandeftine marriages. *Addifon.*—Whom is he *ogling* yonder? himfelf in his looking-glafs. *Arbuthnot.*

* OGLER. *n. f.* [*oogheler*, Dutch.] A fly gazer; one who views with fide glances.—Upon the difufe of the neck piece, the tribe of *oglers* ftared the fair fex in the neck rather than in the face. *Addif.*—Jack was a prodigious *ogler*; he would ogle you, the outfide of his eye inward, and the white upward. *Arbuthnot.*

(1.) OGLETHORPE, James Edward, a Britifh officer, of a very ancient family in Yorkfhire, born about 1698. He entered early into the army, and was made a captain lieutenant in the Queen's Grenadiers, in 1715. He obtained the rank of colonel, Aug. 25, 1737; of major-general, March 30, 1745; lieutenant-general, Sept. 13, 1747; and of general, Feb. 22, 1765. He was elected M. P. for Haflemere in Surrey, in 1722, and continued to repreſent that borough till 1754. In 1729, finding a gentleman, whom he went to vifit in the Fleet prifon, loaded with irons and otherwife barbarouſly uſed, he engaged in the philanthropic inquiry into the ſtate of the jails, and was appointed chairman of the Committee of Inquiry by the Houſe of Commons, upon whoſe inveſtigations ſuch facts came out as were diſgraceful to humanity. In 1732, he was appointed governor of Georgia, in the ſettlement of which he engaged with that ardour which marked all his undertakings; and after overcoming numberleſs difficulties, proved ſucceſsful, though at the expence of large ſums of his private fortune, which, it is ſaid, were never repaid. In 1734, he returned to England, and was choſen deputy governor of the African company; and in 1735, carried back with him to Georgia Meſſrs John and Charles Weſley, with the purpoſe of inſtructing the Indians. Returning to England, he raiſed a regiment, which he carried over to Georgia in 1738. In 1740, he attacked the Spaniards, took two forts, and beſieged St Auguſtine, but without ſucceſs. In 1742, the Spaniards attacked the new ſettlement, but were repulſed. In 1743, he accompanied the D. of Cumberland into Scotland, which was his laſt military expedition. In 1754, he married Eliz. Wright, an heireſs, and ſpent the reſt of his life in eaſy retirement at her ſeat of Cranham Hall in Eſſex; where he died, June 30, 1785.

(2.) OGLETHORPE, a county of Georgia, on the N. bank of the Alatamaha, W. of Liberty county. It is defended by Fort Telfair on the SE.

OGLIASTRO, a town of Sicily, in the valley of Mazara; 9 miles SSE. of Palermo.

(1.) OGLIO, a river of Italy, which riſes at the foot of the mountains of Trent, ſoon after falls into the lake Iſeo, then riſing from the lake, reſumes its courſe above Caprelo weſt-ward, paſſes by Breno, Palazzuolo, Orzi, Nuova, Uſtiano, Caneto, &c. and joins the Po, at Borgoforte.

(2.) OGLIO, a town of Italy, in the dep. of the Lario, diſtrict and late county of Como, ſeated on the E. bank of Lake Como.

(3.) * OGLIO. *n. f.* [from *olla*, Spaniſh.] A diſh made by mingling different kinds of meat; a medley; a hotchpotch.—Like great *oglios*, they rather make a ſhew than provoke appetite. *Suckling.*—Where is there ſuch an *oglio* in medley of various opinions in the world again, as thoſe men entertain in their ſervice? *King Charles.*—He that keeps an open houſe ſhould conſider that there are *oglios* of gueſts, as well as of diſhes. *L'Eſtrange.*

OGLOSA, an iſland of Italy, in the Tyrrhene ſea, E. of Corſica, now called *Monte Chriſto*. *Plin.* iii, 6.

OGMORE, a river of S. Wales, which riſes on the borders of Brecknockſhire, and runs into the Severn, 4 m. SW. of Bridgend, in Glamorganſhire.

OGNATA, a town of Spain, in Guipuſcoa.

OGNY, a town of France, in the dep. of the Moſelle; 5 miles NE. of Gorze, and 3 S. of Metz.

OGOLETZ, an iſland of Ruſſia, in the Straits of Vaigatſkoi. Lon. 69 25. E. Ferro. Lat. 69. 40. N.

OGOR, a river of Ruſſia, which runs into the Duna, 12 miles SE. of Riga.

OGOST, a river of European Turkey, which runs into the Danube, near Rakova, in Bulgaria.

OGOUA, a town of Africa, on the Slave Coaſt, containing about 250 well built houſes, with a ſquare in the centre, ſurrounded with ſhops, where all kinds of wares and proviſions are ſold. The people are ſociable, and governed by magiſtrates.

OGRAM, LOUGH, a lake of Ireland, in Clare county, 8 miles NW. of Killaloe.

OGRAN, a town of Hungary, 15 miles NNW. of Preſburg.

* OGRESSES. *n. f.* [in heraldry.] Cannon balls of a black colour. *Ainſworth.*

OGYGES, king of Thebes, or as others ſay, of Ogygia and Actæ, afterwards called *Bœotia* and *Attica*. He is recorded to have been the firſt founder of Thebes and Eleuſin. The famous deluge happened in his time, in which ſome ſay he periſhed with all his ſubjects, A. A. C. 1796.

(1.) OGYGIA, the iſland of Calypſo; (*Homer.*) placed by Pliny in the Sinus Scylaceus, in the Ionian Sea, oppoſite to the promontory Lacinium; by

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by Mela who calls it *Œac*, in the ſtrait of Sicily: others place it at the promontory Circeium, and call it the iſland of CIRCÆ.

(2.) OGYGIA, the ancient name of Thebes in Bœotia: ſo called from Ogyges, an ancient king, under whom happened a great deluge, 1020 years before the firſt Olympiad.

OGYRIS, an iſland in the Indian ocean.

* OH. *interject.* An exclamation denoting pain, ſorrow, or ſurpriſe.—

He
Cry'd, *oh!* and mounted. *Shak.*

—*Oh* me! all the horſe have got over the river, what ſhall we do? *Walton.*—

My every action ſpeaks my heart aloud;
But *oh*, the madneſs of my high attempt
Speaks louder yet! *Dryden.*

OHAMENO, a harbour of Ulietea.

OHERURNA, a harbour of Otaha.

OHETEROA, one of the South Sea iſlands lately diſcovered. It is neither fertile nor populous; nor has it an harbour or anchorage fit for ſhipping, and the diſpoſition of the people is hoſtile to ſuch as viſit them. Lon. 150. 47. W. Lat. 22. 27. S.

OHEVAHOA, an iſland in the South Sea.

(1.) OHIO, a beautiful river of the United States, formed by the junction of the Allegany and the MONONGAHELA, between the Allegany mountains and the lake Erie; and running SW. through a moſt delighful country, and receiving many ſmaller rivers in its paſſage, at length falls into the Miſſiſippi, in about Lat. 37° N. Its total length is 1188 miles: its general breadth 600 yards, 900 at its mouth, and nowhere above 1200. It ſeparates the North-Weſtern Territory from Kentucky on the S. and Virginia on the SE. It is a mile broad at the *Rapids*, which are a grand caſcade, occaſioned by a ledge of rocks that ſtretch acroſs the bed of the river, near Louiſiana, in Lat. 30. 8. N.

(2.) OHIO, a county of Virginia, bounded on the NW. by the Ohio, and E. by Waſhington county in Pennſylvania. It contained 4,931 citizens and 212 ſlaves in 1795. The chief town is LIBERTY.

OHIOPE, a river of Georgia, which runs into the Alatamaha, in Oglethorpe county.

OHIOPIOMINGO, a town of Kentucky, in Nelſon county, on the Ohio; 60 miles WSW. of Franckfort.

OHIOPYLE FALLS, a cataract of the Youghiogany, in Pennſylvania. See YOUGHIOGANY.

OHITAHOO, an iſland in the S. Pacific Ocean. Lon. 139. 6. W. Lat. 9. 54. S.

OHLA, a river of Sileſia, which riſes 4 m. S. of Munſterberg, and runs into the Oder at Breſlau.

OHLAU, a town of Sileſia, in Brieg, on the Ohla, in a marſh ſurrounded with walls and ramparts. In 1502 and 1641, one half of it was burnt. In 1741, it was taken by the Pruſſians. It is 8 miles NW. of Brieg, and 14 SE. of Breſlau.

OHLENHAUSEN, a town of Auſtria.

OHLM, a town of France, in the dep. of the Rhine and Moſelle, and late electorate of Mentz on the Selz; 6 miles SW. of Mentz.

OHM, a river of Germany, which runs into the Lahn, near Marpurg, in Heſſe.

OHRA, a river of Lower Saxony, which runs into the Unſtrut, 6 miles N. of Erfurt.

OHRDRUF, a town of Saxe Gotha, capital of Gleichen county. It has been ſeveral times burnt. It has numerous manufactures. It is 8 miles SSE. of Gotha, and 15 SW. of Erfurt.

OHRENHAU, a town of Franconia, in Aichſtadt, 6 miles SSE. of Anſpach.

OHRLE, a town of Saxony, in Bremen.

OHRN, a river of Germany, in Franconia.

OI, a river of Ruſſia, running into the Eniſei.

OIA, a river of Ruſſia, which runs into the Gulf of Obſkaia; in Lon. 90. 10. E. Ferro. Lat. 68. 0. N.

OJA, two towns of Sweden; 1. in Smaland, 9 miles SW. of Wexio: 2. in Schonen, 21 miles SE. of Lund.

OIBO, an iſland in the E. Sea, on the coaſt of Africa. Lon. 39. 50. E. Lat. 11. 52. N.

(1.) OICH, a river of Scotland, in Inverneſsſhire, which riſes from the E. extremity of Loch-Oich, and after running 5 miles, falls into Loch-Neſs.

(2.) OICH, LOCH. See LOCH-OICH.

OICHILL, a mountain of Perthſhire, 12 miles SW. of Perth.

OJECK, a town of Poland, in Sandomirz.

OJEN, a town of Spain, in Grenada.

OJEREN, a lake of Norway, in Agerhuus; 64 miles long and 2 broad; 10 miles E. of Chriſtiania.

OJESTADT, a town of Norway, 24 miles NNE of Chriſtianſand.

OIGNON, a river of France, which runs into the Saone, 9 miles S. of Gray.

(1.) * OIL. *n. ſ.* [*oel*, Saxon; *oleum*, Lat.] 1. The juice of olives expreſſed.—Bring pure *oil* olive beaten for the light. *Ex.* xxvii. 20. 2. Any fat, greaſy, unctuous, thin matter.—In moſt birds there is only one gland; in which are divers cells, ending in two or three larger cells, lying under the nipple of the *oil* bag. *Derham.* 3. The juices of vegetables, whether expreſſed or drawn by the ſtill, that will not mix with water.—*Oil*, with chemiſts called ſulphur, is the ſecond of their hypoſtatical, and of the true five chemical principles. It is an inflammable, unctuous, ſubtile ſubſtance, which uſually riſes after the ſpirit. The chemiſts attribute to this principle all diverſity of colours. There are two ſorts of *oil*; one which will ſwim upon water, as *oil* of aniſeed and lavender, which the chemiſts call eſſential; and another kind, which probably is mixed with ſalts, and will ſink in water, as the *oil* of guaiacum and cloves. *Harris.*—After this expreſſed *oil*, we made trial of a diſtilled one; and for that purpoſe made choice of the common *oil* or ſpirit. *Boyle.*—

A curious artiſt long inur'd to toils
Of gentler ſort, with combs, and fragrant *oils*.
Young.

(2.) OIL, in natural hiſtory, an unctuous, inflammable ſubſtance, drawn from ſeveral natural bodies, as animal and vegetable ſubſtances.

(3.) OIL, CHEMICAL PROPERTIES AND PHENOMENA OF. See CHEMISTRY, *Index.*

(4.) OIL, DRYING. See CHEMISTRY, *Index.*

(5.) OIL, ESSENTIAL, OF ROSES. See ROSES.

(6.) OIL, GENERAL CAUSE OF RANCIDITY IN. See CHEMISTRY, *Index.*

(7.) OIL,

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(7.) Oil, method of purifying rancid. Mr Collier has obtained a patent "for a chemical process for freeing fish-oils from their impurities in point of smell, taste, and colour; and improved strainers for oils and other liquids; with other instruments for ascertaining their qualities, and assisting their burning. The machines are illustrated by the figures on *Plate* 247. The chemical process is thus performed: "I put a quantity (says Mr Collier,) of any species of fish-oil, or mixture of different sorts of fish-oil, into any convenient vessel, which I heat to the temperature of 118° or 120° of Fahrenheit's scale; I then add, of caustic mineral alkali (of the specific gravity commonly described as 1·25, or of such strength that a phial containing 1000 grains of distilled water will contain 1250 grains of these leys) a quantity equal to 4 parts to 100, by weight, of the quantity of the oil. I then stir or agitate the mixture, and leave it to stand a sufficient time for the salts and sediment to subside. It is then drawn off into another vessel, containing a sufficient quantity of fresh burnt charcoal, finely powdered, or of any other substance possessing antiseptic properties, in a powdered or divided state, with an addition of a small proportion of diluted sulphuric acid, sufficient only to decompose the small quantity of saponaceous matter still suspended in the oil, which will appear by the oil becoming clear at the surface. The contents of this vessel are also agitated, and the coal, saline, and aqueous particles left to subside; after which, the oil is passed through proper strainers, after described, and is thereby rendered perfectly transparent and fit for use. The principle of my improved strainers or filtering machines, by which, as far as respects them, I deem myself entitled to the exclusive privilege secured by the patent, consists in the means applied to combine hydrostatic pressure (which increases as the perpendicular height of the fluid) with the mode of filtering *per ascensum*, thereby procuring the new and peculiar advantage, that the fluid and its sediment take opposite directions; and also, in whatever is new in the construction of my machines herein described. It cannot but be seen, that a passage for the air, more free from objection than any hitherto adopted, is here contrived in those designed for domestic purposes, *Fig.* 1.; and also, that the easy means of emptying their sediment facilitates the operation, and renders their use perfectly satisfactory to the most minute observer. A great advantage attending this invention is, that the dimensions of the chamber in which the sediment is received may be varied, while the filtering surface remains the same. To adapt these machines, not only to the purposes of families, workhouses, hospitals, public charities, the navy, or the merchant service, but also to all the purposes of oil-men, of distillers, of the laboratory, the brewery, &c. chambers of various capacities must be provided for the sediment and precipitated matter. With respect to the oil trade, the space required is very great, especially for spermaceti or Brazil bottoms. In the various processes of the laboratory, no limits can be fixed, but all dimensions will be occasionally required. In distilleries and breweries they may be smaller in proportion; and in those designed for water, and for domestic use, a very small chamber will be sufficient. When water is to be sweetened, or freed from any putrid or noxious particles it may, from whatever cause, contain, it passes, in its way to the filtering chamber, through an iron box or cylinder L M N O, in *Fig.* 1, containing charcoal, finely powdered, or any other antiseptic substance insoluble in water; which substance is forced closely into the box by any mechanical power; after which the water is made to pass through it by the hydrostatic pressure, through a tube of any sufficient height. This box has 2 apertures, to receive and deliver the fluid, and these are opened or closed by cocks or screws, at P and Q, or any other method used for such purposes; and, being affixed to the machine by other screws, or screws and collars, may be easily detached from the same. Thus, whenever the charcoal begins to lose its antiseptic properties, the box is removed, and heated till it is red hot, by which means the foreign matter escapes through the small apertures; after which, the box is left to cool, and the charcoal becomes sweet, pure, and equally fit for use as at first, though the process be ever so often repeated. *Fig.* 2. is a machine or contrivance for straining oil from the bottoms. I further claim the exclusive privileges arising from the invention of filtering machines in the form of stills, in which charcoal may be repeatedly burned, after any fluid substances have passed through it, either for the purpose of freeing them from putrid or noxious particles, or of discharging their colouring matter; which filtering stills are so contrived, that the fluid may pass through in any quantity, without displacing the charcoal, as in *Fig.* 3. The part of the fluid remaining interspersed among the charcoal, may be driven over by a proper degree of heat, and be employed for many inferior purposes of the arts and manufactures. The heat may be raised so as to purify the charcoal, as in the machines for filtering water, or other fluids for domestic purposes. The flue of the stills is so constructed, that water may be employed to cool them, without the loss of time requisite for their gradually parting with their heat to the surrounding atmosphere, so as to be fit for a subsequent operation. My instruments for ascertaining the comparative qualities of oils, depend in part on the principal of their specific gravities; spermaceti oil, contrasted with other fish-oils, being as 875 to 920. For this purpose, I use a glass vessel, of any convenient shape, furnished with a bubble, also of glass, and a thermometer. If the oil is pure, this bubble sinks, when the mercury rises to a certain standard, by the application of the hand, or of any other heat, to the vessel containing the oil. If the spermaceti oil is impure, the bubble will still float, though it is of the temperature required, and the degree of foreign or impure matter will be shewn, by the scale of the thermometer at which the bubble sinks. To determine what tendency oils used for burning have to congeal in cold weather, I put equal quantities of nitre and sal ammoniac, finely powdered and mixed, into a phial of thin glass, or any other convenient vessel, containing rather more than sufficient water to dissolve them; or I put any other freezing mixture into such vessel:

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fel: I then immerſe a thermometer therein, and let a ſingle drop of the oil under experiment fall on the outſide of the veſſel, where it immediately congeals. As the cold produced by the mixture gradually ceaſes, it is eaſy to obſerve, by the thermometer, at what point of temperature the oil becomes fluid, and runs down the ſides of the glaſs.—*Fig.* 1. A is the ciſtern into which the water, or other fluid to be filtered, is put. BBB, a tube opening into the bottom of the ciſtern A, and bent along the bottom of the machine, conveying the fluid into CC, the filtering chamber, which is covered with leather bound down round its circular rim, and through which leather the water is percolated. DD, the baſon, riſing above the level of the chamber, and receiving the filtered liquor. E, the ſpout by which it runs off, into a pitcher or other veſſel. F, another ſpout, furniſhed with a cock, to draw off the foul water from the chamber, when neceſſary. GGGG, the air tube, which begins above the level of the chamber, is covered with a button, which ſaves the leather from being cut, and has a ſmall lateral aperture for the air to be carried off. This pipe paſſes along the bottom, and up the ſide, and, riſing above the level of the water in the ciſtern, is there cloſed, except a ſmall lateral aperture, through which the air eſcapes. H, *fig.* 4. a guard or rim, with croſs bars, put over the leather, to keep it from being forced up by the water. It is faſtened down by means of two notches on oppoſite ſides of the guard, by which it locks into two ſtaples rivetted into the bottom of the baſon. I, the lid, ſliding down to cover the water from duſt, and ſuſpended at pleaſure by means of K, K, two ſprings on each tube, for that purpoſe. LMNO, a cylindrical box, containing charcoal, which is connected with the above, by means of the tube P, and a continuation of the tube B. LM, the water tube B continued below the charcoal aparatus, ſo that the fluid may paſs through the ſame into the cylinder at Q, from whence it enters the chamber at P, ſo as to be filtered through the leather as before deſcribed. R, R, collars, which may be unſcrewed at pleaſure, ſo as to detach the charcoal apparatus, when the charcoal requires to be purified by heat. S, S, two cocks, to direct the fluid through the charcoal cylinder, or immediately into the filtering chamber. *Fig.* 2. A, a tube or ciſtern, containing the oil to be filtered, and ſupplying a tube of ſufficient height for the hydroſtatic preſſure to operate. BB, a main tube, of wood, tin, leather, or cloth, to which any number of bags C, C, C, C, of the ſize and ſhape of corn-ſacks, or any convenient ſize and ſhape, may be connected; theſe are bound to ſtraight double iron bars D, D, D, D, furniſhed with a hinge at one end, and a ſcrew at the other, by opening which the bags may be emptied. EE, a trough underneath, made to receive the filtered oil. *Fig.* 3. A, a funnel, caſk, or ciſtern, into which the fluid is put, which paſſes down B, a tube fitted into the ſame, through which it enters C, an iron ſtill, full of finely powdered and ſifted charcoal, through the head of which the fluid paſſes into any receiver. D, a fire-place, of any conſtruction, to drive over the fluid remaining interſperſed among the charcoal, and alſo to purify the charcoal by an increaſe of temperature, when required. E, a cock to let water into the flues, to cool the apparatus for a ſubſequent operation."

(8.) OIL, ROCK. See PETROLEUM.

(9.) OILS, ANIMAL, are their fats, which are originally vegetable oils: all animal ſubſtances yield them, together with their volatile ſalts, in diſtillation. Oils or fats may be obtained, by boiling and expreſſion, from certain animal ſubſtances; for the membranes which contain the fat, being chopped ſmall, and ſet in a pan over the fire, become fit for the canvas bag, and, by preſſure, afford a large quantity of fat; as we ſee in the art of chandlery, which, thus extracting the oily matter, leaves a cake behind, commonly called *graves*.

(10.) OILS OF MADAGASCAR. We have this account of different oils in the iſland of Madagaſcar in the *Univerſal Hiſtory*. The moſt common are thoſe of menach-tanhetanhe, menach ſignifying oil, menachil, menach-chouivau, menach-mafoutra, menach-vourave, menach-apocapouc, menach-vintang, and menach arame. Menach-tanhetanhe is drawn from a particular plant called, in the language of the country, *tanhetanhe*, and known in Europe by the name of *palma Chriſti*, or *Ricinus*. Menachil is an oil from the ſeed of ſeſame, which they call *voancaze*; a great quantity whereof is made in the valley of Amboule. Menach-chouivau is drawn from a fruit of the ſize of an almond, extremely good in liquors or meats. Menach-mafoutra is drawn from nuts, the fruit of the tree which produces dragon's blood. Menach-vourave is drawn from a fruit named *fontſi*. Menach-apocapouc is ſqueezed from the fruit apocapouc, extremely poiſonous. Menach-vintang is an oil from large acorns, or maſt. Menach arame is drawn from nuts, the fruit of the tree from which the gum tacamahaca is produced.

(11.) OILS, VEGETABLE, are obtained by expreſſion, infuſion, and diſtillation.

i. OILS, ESSENTIAL, OF VEGETABLES, are obtained by diſtillation with an alembic and a large refrigeratory. Water muſt be added to the materials, in ſufficient quantity to prevent their burning; and they ſhould be macerated or digeſted in that water, a little time before diſtillation. The oil comes over with the water; and either ſwims on the top, or ſinks to the bottom, according as it is ſpecifically heavier or lighter than water. This proceſs is applicable to the diſtilling of the eſſential oils from flowers, leaves, barks, roots, woods, gums, and balſams, with a ſlight alteration of circumſtances, as by longer digeſtion, briſker diſtillation, &c. according to the tenacity and hardneſs of the ſubject, the ponderoſity of the oil, &c. Eſſential oils may be divided into two claſſes according to their different ſpecific gravities; ſome floating upon water, and others readily ſinking to the bottom. Thus, the eſſential oils of cloves, cinnamon, and ſaſſafras, readily ſink, whereas thoſe of lavender, marjoram, mint, &c. ſwim in water: the lighteſt of theſe eſſential oils is, perhaps, that of citron-peel, which even floats in ſpirit of wine; and the heavieſt ſeems to be oil of ſaſſafras. For obtaining the full quantity of the more ponderous oils from cinnamon, cloves, ſaſ-

ſafras,

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ſafras, &c. it is proper to reduce the ſubjects to powder; to digeſt this powder for ſome days in a warm place, with thrice its quantity of ſoft river water, made very ſaline by the addition of ſea-ſalt, or ſharp with oil of vitriol; to uſe the ſtrained decoction, or liquor left behind in the ſtill, inſtead of common water, for freſh digeſtion; to uſe for the ſame purpoſe the water of the ſecond running, after being cleared of its oil; not to diſtil too large a quantity of theſe ſubjects at once; to leave a conſiderable part of the ſtill, or about one fourth, empty; to uſe a briſk fire, or a ſtrong boiling heat, at the firſt, but to ſlacken it afterwards; to have a ſlow ſtill-head, with a proper internal ledge and current leading to the noſe of the worm; and, finally, to cohobate the water, or pour back the liquor of the ſecond running upon the matter in the ſtill, repeating this once or twice. The directions here laid down for obtaining the ponderous oils to advantage, are eaſily transferred to the obtaining of the lighter. Many of the eſſential oils being dear, it is very common to adulterate them ſeveral ways, to render them cheaper. Theſe ſeveral ways ſeem reducible to three general kinds, each of which has its proper method of detection, viz. 1ſt, With expreſſed oils; 2d. With alcohol; and, 3d. With cheaper eſſential oils. If an eſſential oil be adulterated with an expreſſed oil, it is eaſy to diſcover the fraud, by adding a little ſpirit of wine to a few drops of the ſuſpected eſſential oil, and ſhaking them together; for the ſpirit will diſſolve all the oil that is eſſential, or procured by diſtillation, and leave all the expreſſed oil, that was mixed with it, untouched. If an eſſential oil be adulterated with alcohol, or rectified ſpirit of wine, it may be done in proportion, up to that of an equal quantity, without being eaſily diſcoverable either by by the ſmell or taſte: the way to diſcover this fraud, is to put a few drops of the oil into a glaſs of fair water; and if the oil be adulterated with ſpirit, the water will immediately turn milky, and, by continuing to ſhake the glaſs, the whole quantity of ſpirit will be abſorbed by the water and leave the oil pure at top. Finally, if an eſſential oil be adulterated by a cheaper eſſential oil, this is commonly done very artfully; the method is to put fir-wood, turpentine, or oil of turpentine, into the ſtill, along with the herbs to be diſtilled for their oil, ſuch as roſemary, lavender, origanum, &c. and by theſe means the oil of turpentine diſtilled frome theſe ingredients comes over in great quantity, and intimately blended with the oil of the genuine ingredient. The oils thus adulterated always diſcover themſelves in time, by their own flavour being overpowered by the turpentine ſmell; but the ready way to detect the fraud, is to drench a piece of rag, or paper, in the oil, and hold it before the fire; for thus the grateful flavour of the plant will fly off, and leave the naked turpentine ſcent behind. The virtues of oils, being the ſame with thoſe of the ſubſtances from whence they are obtained, may be learned under their ſeveral articles to which we refer.

ii. OILS, EXPRESSED, are obtained from the ſeed, leaves, fruit, and bark of plants; thus, the ſeed of muſtard, and of the ſun flower, almonds, nuts, beech-maſt, &c. afford a copious oil by expreſſion; and the leaves of roſemary, mint, rue, wormwood, thyme, ſage, &c. the berries of juniper, olives, Indian cloves, nutmeg, mace, &c. the barks of cinnamon, ſaſſafras, and clove, yield a conſiderable proportion of eſſential oil by diſtillation. The method of procuring oils by expreſſion is very ſimple; thus if either ſweet or bitter almonds, that are freſh, be pounded in a mortar, the oil may be forced out with a preſs, not heated: and in the ſame manner ſhould the oil be preſſed from linſeed and muſtard. The avoiding the uſe of heat, in preparing theſe oils intended for internal medicinal uſe, is of great importance, as heat gives them a very prejudicial rancidneſs. This method holds of all thoſe vegetable matters that contain a copious oil, in a looſe manner, or in certain cavities or receptacles; the ſides whereof being broken, or ſqueezed, makes them let go the oil they contain: and thus the zeſt or oil of lemon peel, orange peel, citron peel, &c. may be readily obtained by preſſure, without the uſe of fire. But how far this method of obtaining oils may be applied to advantage, ſeems not hitherto conſidered. It has been commonly applied to olives, almonds, linſeed, rapeſeed, beech-maſt, ben-nuts, walnuts, bay-berries, mace, nutmeg, &c. but not, that we know of, to juniper berries, caſhew-nuts, Indian cloves, pine-apples, and many other ſubſtances that might be enumerated, both of foreign and domeſtic growth. It has, however, been of late ſucceſsfully applied to muſtard-ſeed, ſo as to extract a curious gold coloured oil, leaving a cake behind, fit for making the common table muſtard. Certain dry matters, as well as moiſt ones, may be made to afford oils by expreſſion, by grinding them into a meal, which being ſuſpended to receive the vapour of boiling water, will thus be moiſtened ſo as to afford an oil in the ſame manner as almonds; and thus an oil may be procured from linſeed, hemp ſeed, lettuce-ſeed, white poppy-ſeed, &c. Oils obtained by expreſſion ſhould be ſuffered to depurate themſelves by ſtanding in a moderately cool place, to ſeparate from their water, and depoſit their feces; from both which they ought to be carefully freed. And if they are not thus rendered ſufficiently pure, they may be waſhed well with freſh water, then thoroughly ſeparated from it again by the ſeparating glaſs, whereby they will be rendered bright and clear.

iii. OILS OBTAINED BY INFUSION. The next claſs of oils are thoſe made by infuſion or decoction, wherein the virtues of ſome herb or flower are drawn out in the oil; as the oils of roſes, chamomile, hypericum, alder, &c. However, theſe require to be differently treated: thus, for the ſcented flowers, particularly roſes, inſolation does beſt; becauſe much boiling would exhale their more fragrant parts; but oils impregnated with green herbs, as thoſe of chamomile and alder, require long boiling, before they receive the green colour deſired. In general, no oils will bear to be boiled any longer than there remains ſome aqueous humidity, without turning black. There are many compound oils prepared in the ſame manner, viz. by boiling and inſolation, and then ſtraining off the oil for uſe. The ſame contrivance

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trivance has likewiſe its uſe in making eſſences for the ſervice of the perfumer; not only where eſſential oils cannot be well obtained in ſufficient quantities, but alſo where they are too dear. The eſſential oil of jeſſamine flowers, honey-ſuckles, ſweet briar, damaſk roſes, lilies of the valley, &c. are either extremely dear, or ſcarcely obtainable by diſtillation; and, in ſome of them, the odorous matter is ſo ſubtile, as almoſt to be loſt in the operation. But if theſe flowers be barely infuſed in fine oil of nuts, or oil of ben, drawn without heat and kept in a cool place, their ſubtile odorous matter will thus paſs into the oil, and richly impregnate it with their flavour. And theſe eſſences may be rendered ſtill more perfect by ſtraining off the oil at firſt put on, and letting it ſtand again without heat, upon freſh flowers; repeating the operation twice or thrice.

* *To* OIL. *v. a.* [from the noun.] To ſmear or lubricate with oil.—The men fell a rubbing of armour, which a great while had lain *oiled*. *Wotton.*—Amber will attract ſtraws thus *oiled*; it will convert the needles of dials, made either of braſs or iron, although they be much *oiled*, for in thoſe needles conſiſting free upon their centre there can be no adheſion. *Brown's Vulgar Errours.*—Swift *oils* many a ſpring which Harley moves. *Swift.*

* OILCOLOUR. *n. ſ.* [*oil* and *colour*.] Colour made by grinding coloured ſubſtances in oil.—*Oilcolours*, after they are brought to their due temper, may be preſerved long in ſome degree of ſoftneſs, kept all the while under water. *Boyle.*

OILEUS, king of the Locrians, the ſon of Odoedocus and Agrianome, was one of the Argonauts, and the father of Ajax Oileius. See AJAX, N° 1.

* OILINESS. *n. ſ.* [from *oily*.] Unctuouſneſs; greaſineſs; quality approaching to that of oil.—Baſil hath fat and ſucculent leaves; which *oilineſs*, if drawn forth by the ſun, will make a very great change. *Bacon.*—Wine is inflammable, ſo as it hath a kind of *oilineſs*. *Bacon.*—Smoke from unctuous bodies and ſuch whoſe *oilineſs* is evident, he nameth nidor. *Brown's Vulgar Errours.*—Chyle has the ſame principles as milk, viſcidity from the caſeous parts, an *oilineſs* from the butyraceous parts, and an acidity from the tartareous. *Floyer.*—The fleſh of animals, which live upon other animals, is moſt antiacid; though offenſive to the ſtomach ſometimes by reaſon of their *oilineſs*. *Arbuthnot on Aliments.*

* OILMAN. *n. ſ.* [*oil* and *man*.] One who trades in oils and pickles.

* OILSHOP. *n. ſ.* [*oil* and *ſhop*.] A ſhop where oils and pickles are ſold.

* OILY *adj.* [from *oil*.] 1. Conſiſting of oil; containing oil; having the qualities of oil.—The cloud, if it were *oily* or fatty, will not diſcharge. *Bacon's Nat. Hiſt.*—Watery ſubſtances are more apt to putrify than *oily* *Bacon.*—Flame is groſſer than groſs fire, by reaſon of the mixture with it of that viſcous *oily* matter, which, being drawn out of the wood and candle, ſerves for fuel. *Digby.*—2. Fat; greaſy.—

This *oily* raſcal is known as well as Paul's;
Go call him forth. *Shak. Henry IV.*

(1.) * OILYGRAIN. *n. ſ.* A plant. *Miller.*

(2.) OILYGRAIN. See SESAMUM.

(1.) * OILYPALM. *n. ſ.* A tree. It grows as high as the mainmaſt of a ſhip. The inhabitants make an oil from the pulp of the fruit, and draw a wine from the body of the trees, which inebriates; and with the rind of theſe trees they make mats to lie on. *Miller.*

(2.) OILYPALM. See RICINUS.

* *To* OINT. *v. a.* [*oint*, Fr.] To anoint; to ſmear with ſomething unctuous.

They *oint* their naked limbs with mother'd oil. *Dryden*

Iſmarus was not wanting to the war,
Directing *ointed* arrows from afar;
And death with poiſon arm'd. *Dryden's Æneid.*

(1.) * OINTMENT. *n. ſ.* [from *oint*.] Unguent; unctuous matter to ſmear any thing.—

Life and long health that gracious *ointment* gave,
And deadly wounds could heal. *Spenſer.*

(2.) OINTMENT. See PHARMACY,

OIRA, an ancient town of Naples, at the foot of the Appennines, with a caſtle and biſhop's ſee; 20 miles NE. of Tarento. Lon. 17. 54. E. Lat. 40. 38. N.

OIRON, a town of France, in the dep. of the Two Sevres; 6 miles E. of Thouars, and 7 SW. of Loudun.

OIRSCHOT, a town of the Batavian republic, in the department of Dommel and Scheldt, and late prov. of Dutch Brabant, 10 miles SE. of Hertzogenboſch.

OISANS, a town of France, in the dep. of Iſere, and late prov. of Dauphiny, 28 miles SE. of Grenoble. Lon. 6. 15. E. Lat. 45. 0. N.

(1.) OISE, a river of France, which riſes on the borders of the late prov. of Hainault, paſſes by Fere, Chauny, Noyon, Compiegne, Pontoiſe, &c. and joins the Seine 5 miles S. of Pontoiſe.

(2.) OISE, a department of France, bounded on the N. by that of Somme; E. by that of the Aiſne; S. by thoſe of the Seine and Marne, and Seine and Oiſe; and W. by thoſe of the Eure and Lower Seine. It contains part of the ci-devant ISLE OF FRANCE, or what were formerly called, *Beauvois*, *Noyonnais*, and *Valois*; and is about 155 miles long, and 90 broad. Beauvois and Compiegne are alternately the capitals.

OISEAU, a town of France, in the dep. of Maine, 4 miles N. of Maine, and 3 SW. of Ambrieres.

OISEDE, a town of Germany, in Oſnaburg; 6 miles SSE. of Oſnaburg.

OISEL, James, a Dutch lawyer, born in 1631. He became profeſſor of civil law at Groningen; and wrote a treatiſe on ancient braſs coins, entitled, *Theſaurus ſelectorum numiſmatum antiquorum ære expreſſorum*; and ſeveral other works. He died in 1686, aged 55.

OISEMONT, a town of France, in the dep. of the Somme; 9 miles S. of Abbeville, and 21 W. of Amiens.

OISTIN'S TOWN, a town of Barbadoes.

OISY, a town of France, in the dep. of the Straits of Calais; 7½ miles S. of Douay.

OITONG, a town of Thibet, 54 miles SE. of Laſſa.

OKA, two rivers of Ruſſia, the one riſing 40

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miles S. of Orel, and after paſſing Orel, Kaluga, Riazan, &c. falling into the Volga, at Niznei Novgorod: the other running into the Angara, near Bratſkoi; in Lon. 119. 26. E. Ferro. Lat. 56. 5. N.

OKAKEE, a town of Virginia, 10 miles SW. of Dumfries.

OKAMUNDEL, a circar of Indoſtan, in Guzerat.

OKE, a river of Devonſhire, which runs into the Towridge, 2 miles N. of Hatherleigh.

OKEHAM, the capital of Rutlandſhire, in England, ſeated in a rich and pleaſant valley, called the *vale of Catmus*. It is pretty well built, has a good church, a free ſchool, and an hoſpital Lon. 0 45. W. Lat. 52. 40. N.

OKEHAMPTON. See OAKHAMPTON.

OKEMULGEE. See OKMULGEE.

* OKER. *n. ſ.* [See OCHRE] A colour.—

And Klaius taking for his younglings care,
Left greedy eyes to them might challenge lay,
Buſy with *oker* did their ſhoulders mark. *Sid.*

—Red *oker* is one of the moſt heavy colours; yellow *oker* is not ſo, becauſe it is clearer. *Dryden's Dufreſnoy.*

OKEY HOLE, a famous natural cavern of England, on the S. ſide of Mendip hills. The entrance is in the fall of thoſe hills, which is beſet all about with rocks, and has near it a precipitate deſcent of near 12 fathoms deep, at the bottom of which there continually iſſues from the rocks a conſiderable current of water. The naked rocks above the entrance are about 30 fathoms high, and the whole aſcent of the hill above is about a mile, and very ſteep. As you paſs into this vault, you go at firſt upon a level, but advancing farther, the way is rocky and uneven, ſometimes aſcending, and ſometimes deſcending. The roof of this cavern, in the higheſt part, is about 8 fathoms from the ground, but in many places it is ſo low, that one muſt ſtoop to get along. The breadth is not leſs various than the height, for in ſome places it is 5 or 6 fathoms wide, and in others not more than one or two. It is in length about 200 yards. At the fartheſt part of the cavern there is a ſtream of water, large enough to drive a mill, which paſſes all along one ſide of the cavern, and at length ſlides down about 6 or 8 fathoms among the rocks, and then preſſing through the clefts, falls into the valley. The river within the cavern is well ſtored with eels, and has ſome trouts. In dry ſummers, a great number of frogs are ſeen all along this cavern, even to the fartheſt part of it; and on the roof are vaſt numbers of bats.

OKI, an iſland of Japan, 20 miles round.

OKINGHAM, OCKINGHAM, or WOKINGHAM, a large town of Berkſhire, in England, noted for the manufacture of ſilk ſtockings. Lon. 0. 50. W. Lat. 51. 26. N. See OAKINGHAM.

OKLANDBERG, a town of Norway, in Aggerhuys, on the Glomme; 8 miles S. of Chriſtiania.

OKLANSK, a town of Ruſſia, near the Gulf of Penzinſkaia; 1888 miles ENE. of Irkutſk.

OKMIANY, a town of Samogitia.

OKNA, a town of Turkey, in Moldavia.

OKOLSKI, Simon, a native of Poland, author of a hiſtory of Poland, in 3 vols. folio, entitled *Orbis Polonus*, which is reckoned a curious work.

OKONEE, a river of Georgia, which runs into the Oakmulgee.

OKOTA, a river of Ruſſia, in Irkutzk.

(1.) OKOTZK, a province of Ruſſia, in Irkutzk.

(2.) OKOTZK, the capital of the above province, is ſeated at the mouth of the Okota, on a bay of the Eaſtern Ocean.

OKRA. See HIBISCUS, N° 2.

OKRINIA, a river of Boſnia.

OKRISTEL, a town of Germany, in the circle of the Upper Rhine, and county of Iſenburg, on the Maine; 11 miles E. of Mentz, and 3 WSW. of Hochſt.

OKSOR, a town of Egypt, famous for its pottery: 20 miles N. of Aſna.

OKTAY, the ſon of Jenghiz Khan. See CHINA, § 10 and 11.

OKULOKA, a town of Ruſſia, in Archangel, on the Pinega; 180 miles SE. of Archangel.

OKUNEVSK, a town of Ruſſia, in Tobolſk.

OLAF, a king of Norway, in the 10th century, who ſent miſſionaries to Greenland, to convert the natives to Chriſtianity.

OLAN, a river of Aſia, which riſes in Thibet, in Lon. 115. 3. Lat. 37. 58; and, running into Chenſi in China, changes its name to *Tai-tong*, and at laſt falls into the Hoang, in Lon. 120. 30. E. Ferro. Lat. 36. 10. N.

OLAND, an iſland of Denmark, in the North Sea; 8 miles N. of Nordſtrand.

OLANOW, a town of Poland, in Volhynia.

OLAN-POULAC, a town of Aſia, in Thibet.

OLANUS, an ancient town of Leſbos.

OLARGUES, a town of France, in the dep. of Herault, 7½ miles NE. of St Pons, and 15 NW. of Beziers.

OLA, ST. a pariſh of Orkney, united to Kirkwall. See KIRKWALL, N° 1.

OLASTRÆ, an ancient people of India.

OLATRUS, Nicolas, a Hungarian divine and hiſtorian, born at Hermanſtadt. He was made chancellor of Hungary and archbiſhop of Stugonira. He wrote, 1. a Chronicle of his own time; 2. a Hiſtory of Attila; and 3. a Deſcription of Hungary. He died in 1568.

OLAVES, ST. a town of Ireland, in the county of Waterford, and province of Munſter.

OLAUS MAGNUS. See MAGNUS, N° 3.

OLAX, in botany, a genus of the monogynia order, belonging to the triandria claſs of plants; and in the natural method ranking with thoſe of which the order is doubtful. The calyx is entire; the corolla funnel-ſhaped and trifid; the nectarium tetraphyllous.

OLBEGO, a town of Spain, in Old Caſtile.

OLBERSDORF, a town of Silefia, in Jagerndorf; 10 miles WSW. of Leobſchutz.

OLBERSLEBEN, a town of Upper Saxony, in Weimar; 3 miles W. of Buttſtadt.

OLBIA, a town of Sarmatia, at the conflux of the Boryſthenes and the Hypanis. *Pliny.*

OLBROM, a town of Poland, in Cracow.

OLBY, a town of France, in the department of Puy de Dome, 9 miles WSW. of Clermont.

OLCHI-

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OLCHINIUM, or OLCINIUM, an ancient town of Dalmatia, on the Adriatic, now called *Dolcigno*.

OLCON, a river of England, in Herefordshire, which runs into the Munnow.

* OLD, *adj.* [*eald*, Saxon; *alt*, German.] 1. Past the middle part of life; not young.—

To *old* age since you yourself aspire,
Let not *old* age disgrace my high desire. *Sidney.*
He woos high and low, young and *old*. *Shak.*
Wanton as girls, as *old* wives fabulous. *Cowley.*
'Tis greatly wise to know before we're told,
The melancholy news that we grow *old*. *Young.*

2. Decayed by time.—Raiment waxed not *old* upon thee. *Deut.* 3. Of long continuance: begun long ago.—When Gardiner was sent over as ambassador into France, with great pomp, he spoke to an *old* acquaintance. *Camden's Remains.* 4. Not new.—Ye shall eat of the *old* store. *Levit.*—The vine beareth more grapes when it is young; but grapes that make better wine when it is *old*. *Bacon's Nat. Hist.* 5. Ancient; not modern.—The Genoese are cunning, industrious, and inured to hardships; which was the character of the *old* Ligurians. *Addison.* 6. Of any specified duration.—*How old* art thou? Not so young, Sir, to love a woman for singing; nor so *old* to dote on her for any thing. I have years on my back forty-eight. *Shak. King Lear.*—

Plead you to me, fair dame? I know you not:
In Ephesus I am but two hours *old*. *Shak.*
He did enfold
Within an oxe hide, flea'd at nine years *old*,
All th' airy blasts. *Chapman.*

—Any man that shall live to see thirty persons descended of his body alive together, and all above three years *old*, makes this feast, which is done at the cost of the state. *Bacon.* 7. Subsisting before something else.—

Thou need'st not make new songs, but sing the *old*. *Cowley.*
The Latian king, unless he shall submit,
Own his *old* promise, and his new forget. *Dryd.*

—He must live in danger of his house falling about his ears, and will find it cheaper to build it from the ground in a new form; which may not be so convenient as the *old*. *Swift.* 8. Long practised.—Then said I unto her that was *old* in adulteries, will they now commit whoredoms with thee? *Ezek.* xxiii. 43. 9. A word to signify, in burlesque language, more than enough.—Here will be *old* Utis; it will be an excellent stratagem. *Shak.*—Here's a knocking indeed; if a man were porter of hell gate, he should have *old* turning the key. *Shak.* 10. *Of old*; long ago; from ancient times.—These things they cancel, as having been instituted in regard of occasions peculiar to the times *of old*, and as being now superfluous. *Hooker.*—

Whether such virtue, spent *of old*, now fail'd
More angels to create. *Milt. Par. Lost.*
A land there is, Hesperia nam'd *of old*,
The soil is fruitful, and the men are bold;
Now call'd Italia. *Dryden.*
In days *of old* there liv'd of mighty fame,
A valiant prince, and Theseus was his name.
Dryden.

OLD ABERDEEN. See ABERDEEN, N° 1.

OLD AGE. See LONGEVITY. Many methods have been proposed for lengthening life, and rendering old age comfortable. Treatises have been written, containing directions for the attainment of this desireable object, extended to a ridiculous minuteness. They are all included in these grand rules,—Be temperate,—and, Preserve tranquillity of mind.

OLD-BRIDGE, a town of Ireland, in Louth, Leinster, 2 miles from Drogheda. It has a very handsome obelisk on a rock, on the banks of the Boyne, erected in memory of the victory of William III. over James II.

OLD CASTILE. See CASTILE, N° 3.

(1.) OLDCASTLE, Sir John, called the *Good Lord Cobham*, was born in the reign of Edward III. and was the first author, as well as the first martyr, among the English nobility: he obtained his peerage by marrying the heiress of that Lord Cobham, who with so much virtue and patriotism opposed the tyranny of Richard II. By his means the famous statute against provisors was revived, and guarded against by severe penalties; he was one of the leaders of the reforming party; was at great expense in procuring and dispersing copies of Wickliffe's writings among the people, as well as by maintaining a number of his disciples as itinerant preachers. In the reign of Henry IV. he commanded an army in France, and compelled the D. of Orleans to raise the siege of Paris. In that of Henry V. he was accused of heresy; the growth of which was attributed to his influence. Being a domestic in the king's court, the king delayed his prosecution, that he might reason with him himself; but not being able to reclaim him to the church of Rome, he in great displeasure resigned him to its censure. He was apprehended and condemned for heresy; but escaping from the tower, lay concealed for 4 years in Wales, until the rumour of a pretended conspiracy was raised against him, and a price set upon his head. He was at last seized, and executed in St Giles's Fields; being hung alive in chains upon a gallows, and burned by a fire placed underneath. He wrote "Twelve Conclusions, addressed to the Parliament of England."

(2.) OLDCASTLE, a town of Ireland, in Meath, with an old castle, 41 miles from Dublin.

OLDE, or HOLD, a town of Germany, in the circle of Westphalia, and ci-devant bishopric of Munster, secularised in Aug. 1802, and divided by Bonaparte, between the king of Prussia and the princes of Salm-Salm, Salm-Kirbourgh, &c. It lies 2 miles NW. of Stromberg.

(1.) * OLDEN. *adj.* [from *old*; perhaps the Saxon plural.] Ancient. This word is not now in use.—

Blood hath been shed ere now, i' th' *olden* time,
Ere human statute purg'd the gen'ral weal. *Shak.*

(2.) OLDEN, a town of Norway, in Bergen.

OLDENBROEK, a town of Lower Saxony, in Bremen, 26 miles NNE of Carlsburg.

(1.) OLDENBURG, a county of Germany, in the circle of Westphalia, bounded on the N. by the lordship of Jever; E. by the county of Delmenhorst and the Weser; S. by the ci-devant bishopric of Munster, and W. by E. Friesland. It

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is

is 40 miles long, and above 30 broad. It belongs to the K. of Denmark, and entitles him to a seat and voice in the college of the empire, and diets of the circle. The soil is fertile, and its pasturage rears excellent black cattle and horses.

(2.) OLDENBURG, a title of the royal house of Denmark, derived from the above county, and acquired by the marriage of the widow of Christopher III. who died in 1558, to Christian, second son of Theodoric count of Oldenburg.

(3.) OLDENBURG, the capital of the above county, (N° 1.) is seated on the Hunte, is regularly fortified, and contains 4 churches and a citadel, which was rebuilt about 1601. It is 39 miles, says Mr Cruttwell, or 45 according to Dr Brookes, SE. of Embden, and 22 W. of Bremen. Lon. 8. E. Lat. 53. 7. N.

(4.) OLDENBURG, a town of Holstein, near the Baltic, 30 miles N. of Lubec. Lon. 10. 47. E. Lat. 54. 21. N.

(5.) OLDENBURG, a town of Germany, in the bishopric of Paderborn, with a castle: 16 miles ENE. of Paderborn.

(6.) OLDENBURG, Henry, a learned German, in the 17th century, descended from the ancient earls of Oldenburg, in Westphalia. He was born in the duchy of Bremen, and during the long parliament in K. Charles I.'s time, was appointed consul for his countrymen, at London, after the usurpation of Cromwell: but being discharged of that office, he was made tutor to lord Henry O'Bryan, an Irish nobleman, whom he attended to the university of Oxford, where he was admitted to study in the Bodleian library, in 1656. He was afterwards tutor to William lord Cavendish, and was acquainted with Milton the poet. During his residence at Oxford, he became also acquainted with the members of that body there, who gave birth to the royal society; upon the foundation of which, he was elected fellow; and was chosen assistant secretary to Dr Wilkins. He began the publication of the *Philosophical Transactions* with N° 1. in 1664; and held a correspondence with more than 70 learned persons, upon a vast variety of subjects, in different parts of the world. He married a daughter of the famous John Durie, a Scottish divine, by whom he left two children, Rupert and Sophia. He was a constant correspondent of Mr Robert Boyle, with whom he had a very intimate friendship; and translated several of his works into Latin. He continued to publish the *Transactions*, to N° xxxvi. June 25, 1677; after which they were discontinued till Jan. 1678; when his successor in office, Mr Nehemiah Grew, resumed and carried on the work. Mr Oldenburg died at Charleton, near Greenwich, in August 1678.

OLDENBURGEN, Philip Andrew, professor of history and law at Genoa, published several works, of which the most curious is *Thesaurus Rerum Publicarum totius Orbis*, in 4 vols. 8vo. He died at Genoa in 1678.

(1.) OLDENDORF, a town of Lower Saxony, in Lunenburg, seated on the Wenaw and Escaw. Lon. 10. 35. E. Lat. 53. 26. N.

(2.) OLDENDORF, a town of Germany in Schauenburg, on the Weser, 6 miles S. of Schauenburg, and 5 E of Rinteln. Lon. 9. 31. E. Lat. 52. 16. N.

OLDENLANDIA, in botany, a genus of the monogynia order, in the tetandria class of plants; and in the natural method ranking under the 47th order, *Stellatæ*. The empalement of the flower is permanent, sitting upon the germen; the flower has four oval petals, which spread open, and four stamina, terminated by small summits; it hath a roundish germen, situated under the flower, crowned by an indented stigma; the germen afterwards turns to a globular capsule, with two cells filled with small seeds. We have but one species of this plant in the English gardens; but Linnæus enumerates six.

OLDENSTADT, a town of Lunenburg Zell, 1 mile E. of Ultzen, and 20 SSE. of Lunenburg.

OLDENSWORT, a town of Denmark, in Sleswick; 5 miles WSW. of Fredericksstadt.

OLDENZEEL, or OLDENZEL, a town of Holland, in the dep. of the Yssel, and late prov. of Overyssel, 30 miles E. of Deventer, and 40 NW. of Munster. It is supposed to have been anciently inhabited by the Salii. It was burnt in 1492. It was afterwards destroyed by Charles D. of Gueldres. It was taken by Prince Maurice of Nassau, in 1596, and retaken by Spinola in 1605. It was again taken by the Dutch, under Pr. Fred. Henry of Nassau, in 1626, when the fortifications were demolished. Lon. 6. 57. E. Lat. 52. 20. N.

OLDESLO, or OLDESLOHE, a town of Holstein, on the Trave, 19 miles W. of Lubec, and 25 NE of Hamburg. It suffered much by war and fire in the 15th century. It has salt works. Lon. 10. 18. E. Lat. 53. 52. N.

OLDERMAN, John, a learned German, born in Saxony, in 1686. He studied at Helmstadt, and became professor of Greek in that university, in 1717. He wrote several learned dissertations, 1. *De Imperfectione sermonis humani*: 2. *De Phrenetis fluvio*, &c. He died at Helmstadt in 1723.

* OLDFASHIONED. *adj.* [*old* and *fashion*.] Formed according to obsolete custom.—They look on Chaucer as a dry, *oldfashioned* wit, not worth reviving. *Dryden.*—He is one of those *oldfashioned* men of wit and pleasure, that shews his parts by raillery on marriage. *Addison.*

OLDFIELD, Anne, a famous actress, born at London in 1683. She was many years the favourite of the town in genteel comedy; but had amours with Arthur Maynwaring Esq; and Gen. Churchill, by each of whom she had a son. She died in 1730.

OLDHAM, John, an eminent English poet in the 17th century, son of a nonconformist minister, was educated under his father, and then sent to Edmund-hall in Oxford. He became usher to the free school at Croyden in Surry, and was afterwards tutor to several gentlemens sons successively. Having saved a little money, he went to London, and became a votary to the bottle, being an agreeable companion. He was acquainted with Dryden, Rochester, and the wits of his time. He lived mostly with the earl of Kingston at Holme-Pierpoint in Nottinghamshire, where he died of the smallpox in 1683, in his 30th year. His works chiefly consist of satires, odes, translations, paraphrases of Horace, &c, elegiac verses, imitations, parodies, familiar epistles, &c.

(1.) OLDHAMSTOCKS, a parish of Scotland, in

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in the counties of Haddington and Berwick; about 6 miles long from NE. to SW. and from 2 to 3 broad. The surface is hilly; the soil sharp and dry, but very fertile near the sea-coast; the air is dry and healthy. Husbandry is improved, but inclosures are wanted. The population in 1791 was 468; decreafe 124 fince 1755. Limeftone, free-ftone, iron-ftone, and coals abound. Dunglafs, the feat of Sir James Hall, Bart. is an elegant modern building, erected on the fite of the ancient caftle, which was blown up in 1640, when Lord Haddington and a number of neighbouring gentlemen were blown up with it.

(2.) OLDHAMSTOCKS, a fifhing village in the above parifh, 6 miles E. of Dunbar, and 20 W. of Berwick. It has fairs on the 1ft Tuefday of July and November.

(1.) OLD HEAD, a cape of Ireland, in Cork, Munfter, 4 miles S. of Kinfale; it runs far into the fea, and has a light-houfe. A mile from its extremity is an ancient caftle of the lords of Kinfale, built from one fide of the ifthmus to the other, which defended all the lands towards the head: this place was formerly called *Dunscarmo*, and was the old feat of the Irifh kings. The ifthmus, by the working of the fea, was quite penetrated through, fo as to form a ftupendous arch, under which boats might pafs from one bay to the other. Among the rocks of this coaft there are aviaries of good hawks; alfo fea-eagles, ofpreys, &c.

(2.) OLD HEAD, a cape of the Orkneys, on the SE. coaft of Ronaldfhay. Lon. 0. 36. E. of Edinburgh. Lat. 58. 38. N

OLDISWORTH, William, an author well known in the reigns of Q. Anne and K. George I. He was one of the original writers in the *Examiner*, and continued to write in it to its concluſion. He alfo publifhed *State Tracts, and State and Miſcellany Poems*, 8vo. He died Sept. 15th 1734.

OLD KILPATRICK. See KILPATRICK, N° 2.

OLD LUCE. See LUCE, N° 2.

OLD MAN OF THE MOUNTAIN. See ASSASSINS, § 2.

OLD MAN'S BAY, a bay on the S. coaft of Newfoundland, 80 miles E. of Cape Rey.

OLD MELDRUM. See MELDRUM, N° 2.

OLD MERRION, a town of Ireland, near Dublin.

(1.) OLDMIXON, John, a violent party writer, and malevolent critic, who would fcarcely have been remembered, *if* Pope had not *condemned* him to immortality in his *Dunciad*. He was defcended of an ancient family in Somerfetfhire. His party writings procured him a place in the revenue at Liverpool, where he died at an advanced age, in 1745. Befides his temporary pieces, he wrote a Hiftory of the Stuarts in folio; a Critical Hiftory of England, 2 vols 8vo; a volume of poems, fome dramatic pieces, &c.; none of them worthy of notice, his principal talent being that of falfifying hiftory.

(2.) OLDMIXON, a town of Somerfetfhire, near Bridgewater.

OLD MONKLAND. See MONKLAND, N° 2.

OLD NABB, a cape on the N. coaft of Yorkfhire, 9 miles NW. of Whitby.

* OLDNESS. *n. f.* [from *old.*] Old age; antiquity; not newnefs; quality of being old.—This policy and reverence of ages makes the world bitter to the beft of our times; keeps our fortunes from us till our *oldnefs* cannot reliſh them. *Shak. K. Lear.*

OLDNEY, an iſland of Sutherlandfhire, in the parifh of Affint, one mile long.

OLD PEAK, a cape of Yorkfhire, 9 miles NNW. of Scarborough.

OLD ROSS. See ROSS, N° 2.

OLDSTOKE, a town of Hampfhire.

(1.) OLD TOWN, a town of Georgia, on the Ogeeche, 85 miles NW. by W. of Savannah.

(2.) OLD-TOWN, a town of Maryland, in Allegany county, on the N. bank of the Patowmac; 142 miles W. by N. of Baltimore, and 213 of Philadelphia.

(3.) OLD-TOWN, a town of New York, in Staten iſland, 12 miles SW. of New York.

(4.) OLD-TOWN, a town of N. Carolina, near Brunfwick.

(5.) OLD TOWN, a town of Ireland, in Donegal.

(6—9.) OLD-TOWN, 4 fmall towns of England; viz. 2 in Herefordſ, 2 in Northumberland, and 1 in Yorkfhire.

(1.) OLD WIFE, or WRASSE. See LABRUS.

(2.) OLD WIFE FISH. See BALISTES, N° 8.

OLD WOMAN'S ISLAND, a narrow ſlip of land, about two miles long, ſeparated from Bombay in the Eaſt Indies by an arm of the ſea, which, however, is paſſable at low water. It terminates at one extremity in a ſmall eminence, on which a look-out houſe is kept for veſſels. Near the middle are three tombs kept conſtantly white, as land-marks into the harbour. From the end of the iſland a dangerous ledge of rocks ſhoots forth, which are not very eaſily cleared. It produces only paſture for a few cattle.

(1.) OLDYS, William, LL.D. third ſon of Dr William Oldys, was born at Atterbury, Oct. 19th 1636, and ſtudied at Oxford, where he took his degrees in 1661 and 1667. He entered into Doctor's Commons, London, in 1669; was made commiſſary of Bucks in 1686; advocate of the admiralty, and chancellor of Lincoln, in 1688. He was a man of great genius, and ſkilled in many ſciences. He died in 1708.

(2.) OLDYS, William, Eſq. Norroy king at arms, and an eminent antiquary, was a natural ſon of the Doctor's (N° 1.) born in 1687. He was a good hiſtorian, a correct writer, and well verſed in Engliſh antiquities. He wrote, 1. The Britiſh Librarian, 8vo, 1737: 2. The Life of Sir Walter Raleigh, prefixed to his Hiſtory of the World: 3. Various Lives in Biographia Britannica. He died at London, April 15, 1761.

OLEA, in botany, the OLIVE TREE, a genus of the monogynia order, belonging to the diandria claſs of plants; and in the natural method ranking under the 44th order, *Sepiariæ*. The corolla is quadrifid, with the ſegments nearly ovate. The fruit is a monoſpermous plum. There are 3 ſpecies:

1. OLEA CAPENSIS, the *Cape box-leaved olive*, riſes with ſhrubby ſtems, branching numerouſly from the bottom, 6 or 7 feet high; ſmall, oval, thick, ſtiff, ſhining leaves; and at the axillas ſmall cluſters

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clusters of whitish flowers; succeeded by small fruit of inferior value.

2. OLEA EUROPEA, the common olive tree, rises with upright solid stems; branching numerously on every side, 20 or 30 feet high; spear-shaped, stiff, opposite leaves, 2 or 3 inches long, and half an inch or more broad; and at the axillas small clusters of white flowers, succeeded by oval fruit. This species is the principal sort cultivated for its fruit; the varieties of which are numerous, varying in size, colour, and quality. It is a native of the southern warm parts of Europe, and is cultivated in great quantities in the S. of France, Italy, and Portugal, for the fruit, to make olive oil; which is in great repute, and is transported to all parts, to the great advantage of those countries where the trees grow in the open ground: the green fruit is also in much esteem for pickling. Olive trees are easily propagated by shoots, which, when care has been taken to ingraft them properly, bear fruit in 8 or 10 years. Those kinds which produce the purest oil, and bear the greatest quantity of fruit, are ingrafted on the stocks of inferior kinds. Different names are given by the French to the varieties of the olive tree; and of these they reckon 19, whilst in Florence are cultivated no fewer than 32. Olive shoots are ingrafted when in flower. If the operation has been delayed, and the tree bears fruit, it is thought sufficient to take off a ring of bark, two fingers breadth in extent, above the highest graff. In that case the branches do not decay the first year; they afford nourishment to the fruit, and are not lopped off till the following spring. Olive trees are commonly planted in the form of a quincunx, and in rows at a considerable distance from one another. Between the rows it is usual to plant vines, or to sow some kind of grain. It is observed, that olives, like many other fruit trees, bear well only once in two years. The whole art of dressing these trees consists in removing the superfluous wood; for it is remarked, that trees loaded with too much wood produce neither so much fruit nor of so good a quality. Their propagation in England is commonly by layers. The laying is performed on the young branches in spring. Give plenty of water all summer, and they will sometimes be rooted and fit for potting off in autumn; but sometimes they require two summers to be rooted effectually. When, however, they are properly rooted, take them off early in autumn, and pot them separately; give water, and place them in the shade till they have taken fresh root; and in October remove them into the green-house, &c. Those you intend to plant in the open ground, should be kept in pots, to have occasional shelter of a garden-frame two or three years, till they have acquired some size, and are hardened to the full air; then transplant them into a warm border against a wall; mulch their roots in winter, and mat their tops in frosty weather. Olives have an acrid, bitter, extremely disagreeable taste: pickled they prove less disagreeable. The Lucca olives, which are smaller than the others, have the weakest taste; the Spanish, or larger, the strongest; the Provence, which are of a middling size, are generally the most esteemed. When olives are intended for preservation, they are gathered before they are ripe. The art of preparing them consists in removing their bitterness, in preserving them green, and in impregnating them with a brine of aromatised sea-salt, which gives them an agreeable taste. For this purpose different methods are employed. Formerly they used a mixture of 4 lb. of quicklime with 6 lb. of newly sifted wood-ashes; but of late, instead of the ashes, they employ nothing but a lye. This softens the olives, makes them more agreeable to the taste, and less hurtful to the constitution. In some parts of Provence, after the olives have lain some time in the brine, they remove them, take out the kernel, and put a caper in its place. These olives they preserve in excellent oil; and when thus prepared, they strongly stimulate the appetite in winter. Olives perfectly ripe are soft, and of a dark red colour. They are then eaten without any preparation, excepting only a seasoning of pepper, salt, and oil; for they are extremely tart, bitter, and corrosive. (See OLIVE OIL.) Great drought, as well as much rain, is extremely injurious to the crop of olives. This fruit is much exposed to the attacks of a worm peculiar to itself, and which injures it so much, that, after the olives are gathered, the produce of the oil extracted from them is diminished one half. The wood of the olive tree is beautifully veined, and has a pretty agreeable smell: it is in great esteem with cabinet-makers, on account of the fine polish which it takes. It is of a resinous nature, and consequently excellent for burning. As the laurel branch is the symbol of glory, so the olive branch covered with leaves has, from the most ancient times, been the emblem of concord, the symbol of friendship and PEACE. The leaves of olive trees have an astringent quality. Many people use them in making gargles for inflammations of the throat. These plants in this country must be kept principally in pots for moving to the shelter of a green-house in winter; for they are too tender to prosper in the open ground in this climate: though sometimes they are planted against a warm south wall, and sheltered occasionally from frost in winter, by mulching the roots, and matting their tops; whereby they may be preserved, and will sometimes produce fruit for pickling. A very severe winter, however, often kills or greatly injures their young branches; therefore let the principal part be potted in rich earth, and placed among the green-house shrubs, and managed as others of that kind. These trees are often sent over from Italy to the Italian warehouses in London, along with orange trees, &c. where pretty large plants may be purchased reasonably, which should be managed as directed for orange trees that are imported from the same country. See CITRUS.

3. OLEA FRAGRANS, or } called in India QUEFA,
OLEA ODORATISSIMA, } in Japan *Skio Ran*, or *Siu Ran*, is thus described by Thunberg; *bulbis fibrosis, foliis enfiformibus, sessilibus, floribus pendulis.* (See *Plate* CCXLVII.) The flower is by some said to give the fine flavour to the green tea; but Thunberg attributes the said flavour to the *Camellia sesanqua*.

OLEADES, an ancient people of Spain.

(1.) * OLEAGINOUS. *adj.* [*oleaginus*, Latin, from *oleum*; *oleagineaux*, Fr.] Oily; unctuous.—

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The sap, when it first enters the root, is earthy, watery, poor, and scarce *oleaginous*. *Arbuth.*

(2.) OLEAGINOUS denotes something that partakes of the nature of oil, or out of which oil may be expressed.

* OLEAGINOUSNESS, *n. f.* [from *oleaginous.*] Oiliness.—In speaking of the *oleaginousness* of urinous spirits, I employ the word most rather than all. *Boyle.*

(1.) * OLEANDER, *n. f.* [*oleandre*, Fr.] The plant rosebay.

(2.) OLEANDER. See NERIUM, N° II. 2.

(1.) OLEARIUS, Adam, minister to the duke of Holstein, and secretary to the embassy sent in 1633 to the great duke of Muscovy and to the king of Persia. He spent six years in this employment; and, on his return, published a relation of his journeys, with maps and figures, at Slesvick, 1656, in folio. He wrote an *Abridgment of the Chronicles of Holstein from* 1448 *to* 1663; and was appointed librarian to the duke of Holstein, in which capacity he probably died. He has the character of an able mathematician, an adept of music, and a good orientalist, especially in the Persian language.

(2.) OLEARIUS, Godfrey, son of Godfrey Olearius, D. D. superintendant of Halle in Saxony, was born there in 1639. He became professor of Greek at Leipsic. He discharged the most important posts in the university, and, among other dignities, was ten times rector of it. His learning and industry were displayed in 106 theological disputations, 61 in philosophy, some programmas upon difficult points, several speeches and theological counsels; which make two thick volumes: beside his Moral Theology, his Introduction to Theology, which treats of cases of conscience, and his *Hermeneutica Sacra*. He died in 1713.

(3.) OLEARIUS, Godfrey, eldest son of the above, was a man of genius and learning, a professor in the same university, and published several works; but died young of a consumption before his father.

OLEAROS, one of the CYCLADES.

O'LEARY, Rev. Arthur, an eminent Irish Roman Catholic divine, born at Cork in 1729. He was a Dominican friar, and preached in his friary in Cork for many years. As a public author, he ranks high in the literary world. Sir Lucius O'Brien compared him to Ganganelli. He wrote, 1. *A Defence of the Divinity of Christ and the Immortality of the Soul*; (Cork, 1784) in a series of letters to the author of a profane work, entitled, *Thoughts on Nature and Religion, by Michael Servetus*, but which was the impious effusion of a physician in Cork, whom O'Leary exposed to merited contempt. 2. *Loyalty Asserted*: 3. *An Essay on Toleration*: 4. *Letters to Mr John Wesley*: 5. *A Defence of his Conduct and Writings, during the Disturbances in Munster*; in answer to Dr Woodward, bishop of Cloyne, and Mr Trant, who wrote under the signature of Theophilus: 1781. In this piece, on the topic of *purgatory*, he recommended a *truce*, as being a proposition that could neither be demonstratively supported nor disproved; and therefore his lordship should take the thing as he found it, as it is possible "*he may go further and fare worse.*" He was a man of great urbanity of manners: in his writings he was pleasant, humorous, and energetic. He died at London, 8th January 1802, aged 72.

(1.) * OLEASTER. *n. f.* [Lat.] Wild olive; a species of olive.—It is a native of Italy, but will endure the cold of our climate, and grow to the height of 16 or 18 feet. It blooms in June, and perfumes the circumambient air to a great distance. *Miller.*

(2.) OLEASTER. See ELÆAGNUS.

OLEATRUM, an ancient town of Spain, near Saguntum. *Strabo.*

OLECKO, a town of Poland, in Volhynia, 56 miles SW. of Lucko. Lon. 25. 10. E. Lat. 50. 23. N.

OLECRANON, or OLECRANUM, in anatomy, the protuberance of the ulna, which prevents the joint of the elbow from being bent back beyond a certain length. See ANATOMY, § 149.

OLEGGIO, a town of Italy, in the dep. of Olona, district and late duchy of Milan, on the Tessino. In 1704, a French garrison was surprised and taken in it, by the Imperialists. It is 9 miles NNE. of Novara, and 23 W. of Milan.

OLEGON, a cape of Russia, in the sea of Ochotsk, 252 miles E. of Ochotsk. Lon. 169. 0. E. Ferro. Lat. 59. 20. N.

OLEKMA, a river of Russia, which rises in the mountains near China, in lat. 49°, and running N. falls into the Lena, opposite Olekminsk.

OLEKMINSK, a town of Russia, in Irkutsk, at the junction of the Olekma and Lena; 300 miles WSW. of Yakutsk. Lon. 137° E. Ferro. Lat. 60. 25. N.

OLEN. See OLENUS, N° 1.

OLENEK, a town and river of Russia.

OLENI, a town of Poland, in Braclaw.

OLENKA, two rivers of Russia.

OLENSKOI, a town of Russia, in Archangel, 120 miles E. of Archangel.

(1.) OLENUS, or OLEN, a Greek poet, older than Orpheus, born at Xanthe, a city of Lycia. He composed several hymns, which were sung in the island of Delos upon festival days. Olenus is said to have been one of the founders of the oracle at Delphi; to have been the first who filled at that place the office of priest of Apollo; and to have given responses in verse.

(2.) OLENUS, or OLENUM, an ancient town of Peloponnesus, between Patræ and Cyllene. *Paus.* vii. 22.

OLEORUS, one of the Cyclades, now called ANTIPAROS.

* OLEOSE. *adj.* [*oleosus*, Lat.] Oily.—Rain water may be endued with some vegetating or prolifick virtue, derived from some saline or *oleose* particles it contains. *Ray.*—In falcons is a small quantity of gall, the *oleous* parts of the chyle being spent most on the fat. *Floyer.*

OLEOUT, a river of the United States, which runs into the E. branch of the Susquehannah.

(1.) OLERON, an island in the Atlantic, on the W. coast of France, 5 miles from the continent, in the dep. of the Lower Charente. It is 12 miles long, 5 broad, and very fertile, containing about 18,000 inhabitants, who are excellent seamen. It is defended by a castle, which is well fortified

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fortified; and has a light-house. It is 14 miles SE. of Rochelle. Lon. 1. 26. W. Lat 46. 10. N.

(2.) OLERON, a town of France, in the dep. of Lower Charente, on the E. coast of the above island; 10 miles WSW. of Rochfort, and 16 S. of Rochelle. Lon. 1. 20. W. Lat. 45. 55. N.

(3.) OLERON, a town of France in the dep. of the Lower Pyrenees, and ci devant prov. of Bearn; seated on the Gave, 10 miles SW. of Pau, and 30 W. of Tarbe. Lon. 0. 14. W. Lat. 43. 7. N.

(4.) OLERON, SEA LAWS OF, certain laws relative to maritime affairs, made by K. Richard I. when he was at the island of Oleron. These laws, being accounted the most excellent sea-laws in the world, are recorded in the Black Book of the admiralty: and are the foundation of the MARITIME LAWS of most states in Europe. See *Selden's Mare Clausum*. See MARITIME, § 7.

OLES, a town of Istria, 16 miles NW. of Pedena.

OLESA, a town of Spain, in Catalonia.

OLESKO, a town of Poland, in Belcz.

OLESNICK, a town of Poland, in Sandomirz, 28 miles W. of Sandomirz.

OLETTA, a town of France, in the island and dep. of Corsica, 6 miles SW. of Bastia, and 13 NNE. of Corte.

OLETTE, a town of France, in the dep. of the Eastern Pyrenees, famous for its warm baths; 7½ miles SW. of Prades, and 15 N. of Compredon.

OLETZKO, a castle of Prussia.

OLEVITO, a town of Naples, in Principato Citra; 23 miles E. of Salerno.

OLEUM PALMÆ CHRISTI, commonly called CASTOR OIL, is extracted from the kernel of the fruit produced by the *Ricinus Americanus*. (See RICINUS). This oil has been much used as a purgative in medicine. It acts gently on the bowels, with little or no irritation. By many physicians it has been deemed a sovereign remedy in bilious, calculous, and nephritic complaints; but its taste is extremely nauseous, and, when frequently used, it is apt to relax the tone of the bowels. It is recommended to be given in clysters; and Dr Canvane of Bath affirms, that when children cannot be made to swallow any medicine, if the navel and hypochondria be rubbed with this oil, it will produce one or two physical stools. He adds, that in small draughts, or by clyster, or by embrocation, it is an excellent and wonderful vermifuge.

OLEWSKO, a town of Poland, in Brzesk.

* *To* OLFACT. *v. a.* [*olfactus*, Latin.] To smell. A burlesque word.—

There is a machiavelian plot,
Tho' every nare *olfact* it not. *Hudibras.*

(1.) * OLFACTORY. *adj.* [*olfactoire*, Fr. from *olfacio*, Lat.] Having the sense of smelling.—Effluvias, or invisible particles that come from bodies at a distance, immediately affect the *olfactory* nerves. *Locke.*

(2.) OLFACTORY NERVES. See ANATOMY, *Index.*

OLGA, the queen of Igor, the 2d monarch of Russia, who flourished about A. D. 880, having succeeded his father Ruric, who died in 878. Olga was born in Pleskow, and was of the best family in that city. She bore him one son, called *Sweteslaw*. Igor being murdered by the Drewenses or Drewliani, Olga revenged his death. She went afterwards to Constantinople, where she was baptized by the name of *Helena*. The emperor John Zimisces was her god-father, and fell in love with her, but she, alleging their spiritual alliance, refused to marry him. Her example made some impression upon her subjects, many of whom became converts to Christianity; but none upon her son, who reigned for a long time after her death, which happened at Pereslaw, in the 80th year of her age, 14 years after her baptism. The Russians rank her among their saints, and keep her festival on the 11th of July.

OLGASYS, a mountain of Galatia.

OLGIATE, a town of Italy, in the department of the Lario, district and late county of Como, on the E. bank of Lake Como, near Lecco and Aqua.

OLGSKOI, a town of Russia, in Olonetz.

OLHOB, a town of Arabia, in Hedsjas; 60 miles SSE. of Mecca.

OLIARA, a river of Spain, which falls into the Cabriel, a little above its junction with the Xucar.

OLIBANUM, in pharmacy, a gummy resin, the product of the *juniperus lycia* Linnæi, brought from Turkey and the East Indies, usually in drops or tears like those of mastich, but larger; of a pale yellowish, and sometimes reddish colour; a moderately warm pungent taste, and a strong, not very agreeable smell. This drug has received many different appellations, according to its different appearances; the single tears are called simply *olibanum*, or THUS; when two are joined together, they have been called *thus masculum*, and when very large, *thus femininum*: sometimes 4 or 5 about the bigness of filberts, are found adhering to a piece of the bark of the tree which they exuded from; these have been named *thus corticosum*: the finer powder which rubs off from the tears in the carriage, *mica thuris*; and the coarser powder, *manna thuris*. This drug is not however, in any of its states, what is now called *thus* or *frankincense* in the shops. See THUS. Olibanum consists of about equal parts of a gummy and resinous substance; the first soluble in water, the other in rectified spirit. With regard to its virtues, abundance have been attributed to it particularly in disorders of the head and breast, in hæmoptoes, and in alvine and uterine fluxes: but its real effects in these cases are far from answering the promises of the recommenders. Riverius is said to have had large experience of the good effects of this drug in pleurisies, especially epidemic ones: he directs a scooped apple to be filled with a dram of olibanum, then covered and roasted under the ashes; this is to be taken for a dose, three ounces of carduus water after it, and the patient covered up warm in bed; in a short time, he says, either a plentiful sweat, or a gentle diarrhœa ensues, which carry off the disease. Geoffroy says, that he has frequently made use of this medicine after venesection, with good success; but that it has sometimes failed.

OLIBATO, a town of Guinea, on a river so named, 36 miles E. of Cape Lodez Gonsalvo.

* OLID. } *adj.* [*olidus*, Latin.] Stinking;
* OLIDOUS. } fœtid. In a civet cat a different and offensive odour proceeds, partly from its food

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food, that being especially fish, whereof this humour may be a garous excretion and *olidous* separation. *Brown.*—The fixt salt would have been not unlike that of men's urine; of which *olid* and despicable liquor I choose to make an instance, because chemists are not wont to take care for extracting the fixt salt of it. *Boyle.*

OLIGÆDRA, in natural history, a genus of crystals composed of very few planes, as the name expresses. The word is compounded of ολιγος "a few," and εδρα "a plane." The bodies of this class are crystals of the imperfect kind; being composed of columns affixed irregularly to some solid body at one end, and the other terminated by a pyramid: but the column and pyramid being both pentangular, the whole consists only of ten planes, and not, as the common kind, of 12.

OLIGARCHICAL. *adj.* [from *oligarchy.*] Pertaining to an oligarchy. *Ash.*

* OLIGARCHY. *n. f.* [ολιγαρχια.] A form of government which places the supreme power in a small number; aristocracy.—The worst kind of *oligarchy*, is, when men are governed indeed by a few, and yet are not taught to know what those few be whom they should obey. *Sidney.*—We have no aristocracies but in contemplation; all *oligarchies*, wherein a few men domineer, do what they list. *Burt.*—After the expedition into Sicily the Athenians chose 400 men for administration of affairs, who became a body of tyrants, and were called an *oligarchy*, or tyranny of the few; under which hateful denomination they were soon after deposed. *Swift.*

OLIGOTROPHOUS. *adj.* nourishing but little. *Ash.*

OLIGOTROPHY. *n. f.* [from ολιγος, Gr. small, and τροφω, to nourish.] A small degree, or decrease, of nourishment. *Ash.*

OLIGYRTIS, a town of Peloponnesus.

OLIKA, a strong town of Poland, in Volhynia, with a citadel. Lon. 26. 8. E. Lat. 51. 15. N.

OLIMPIA. See OLYMPIA.

OLIMPO. See OLYMPUS.

(1.) OLINDA, FERNAMBUCO, or PHERNAMBUCO, a prov. of Brazil, along the coast of the Atlantic; abounding with cotton, sugar, Brazil wood, &c.

(2.) OLINDA, the capital of the above province, so named by the Dutch, but called Fernambuco by the Portuguese. It is a bishop's see, and a sea port with a good harbour. It was taken by the Dutch in 1630, but retaken by the Portuguese. It has a good trade. Lon. 35. 0. W. Lat. 8. 13. S.

OLINTHUS. See OLYNTHUS.

(1.) * OLIO. *n. f.* [*olla*, Span.] A mixture; a medley. See OGLIO.—Ben Jonson, in his Sejanus and Catiline, has given us this *olio* of a play, this unnatural mixture of comedy and tragedy. *Dryden on Dram. Poetry.*—I have such an *olio* of affairs, I know not what to do. *Congr. Way of the world.*

(2.) OLIO, or OGLIO, a savoury dish of food, composed of a great variety of ingredients; chiefly found at Spanish tables. The forms of olios are various. To give a notion of the strange assemblage, we quote one from an approved author: Take a rump of beef, neat's tongues boiled and dried, and Bologna sausages; boil them together, and, after boiling two hours, add mutton, pork, venison, and bacon, cut in bits; as also turnips, carrots, onions, and cabbage, borage, endive, marigolds, sorrel, and spinach; then spices, as saffron, cloves, mace, nutmeg, &c. This done, in another pot put a turkey or goose, with capons, pheasants, wigeons, and ducks, partridges, teals, and stock-doves, snipes, quails, and larks, and boil them in water and salt. In a third vessel, prepare a sauce of white wine, strong broth, butter, bottoms of artichokes, and chesnuts, with cauliflowers, bread, marrow, yolks of eggs, mace, and saffron. Lastly, dish the olio, by first laying out the beef and veal, then the venison, mutton, tongues, and sausages, and the roots over all; then the largest fowls, then the smallest, and lastly pour on the sauce.

OLIOULES, a town of France, in the dep. of Var, and district of Toulon, 4 miles W. of Toulon, and 30 SSE. of Aix. Near it the troops of the allies were defeated by the French, under Gen. Cartaux, on the 8th Sept. 1793.

OLIPHANT, a town of N. Carolina; 26 miles W. of Salisbury.

OLISIPO, a town of Lusitania, situated on the N. side of the frith of the Tagus; of such antiquity, that Solinus thought it was built by ULYSSES; and Mela writes, according to the common copies, ULYSSIPO. It was a municipium, with the surname *Felicitas Julia*, a privilege granted by the munificence of Augustus: (*Pliny.*) Now called Lisbon. See LISBON, N° 1.

(1.) OLITA, a town of Mexico, in Xalisco.

(2.) OLITA, a town of Lithuania, in Troki.

(3.) OLITA, or OLITE, } a handsome town of Spain, in Navarre, anciently the residence of the kings of Navarre, seated in a fertile country, on the road from Pampeluna to Saragossa, 20 miles N. of Tudela. Lon. 1. 46. W. Lat. 42. 22. N.

OLITINGI, a town of Lusitania. *Mela.*

(1.) * OLITORY. *n. f.* [*olitor*, Latin.] Belonging to the kitchen garden.—Gather your *olitory* seeds. *Evelyn's Kal.*

(2.) OLITORY, as above defined by Dr JOHNSON, is not a *substantive* noun, but an *adjective.* In the quotation from *Evelyn*, it is evidently used as an adjective. As a substantive noun, it signifies "a garden of herbs," or "a kitchen garden," and is very properly explained, and ranked as such, by Dr Ash.

(1.) OLIVA, Alexander, a celebrated cardinal, and general of the Austin monks, was born at Saxoferato, in 1408. He was admitted young among the Augustines, and studied at Rimini, Bologna, and Perugia; in which last university he was appointed professor of philosophy and divinity. He was successively chosen provincial, solicitor-general, vicar, and general of his order; and in 1460, was appointed a cardinal and Bp. of Camerino by Pius II. He published, 1. *De Christi Ortu Sermones Centum:* 2. *De Cœna cum Apostolis facta:* 3. *De Peccato in Spiritum Sanctum:* 4. *Orationes elegantes.* He died at Tivola, in 1463.

(2.) OLIVA, John, a learned Italian, professor of morality at Azalo. He was patronized by Clement XI, and wrote some pieces, but his works are not interesting.

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(3.) OLIVA, a sea port town of Pomerania, on a bay of the Baltic; with a monastery; famous for a peace concluded in it between the emperor and the kings of Sweden and Poland, in 1660. It is 3 miles, says Dr Brookes, *ten*, says Mr Cruttwell, W. of Dantzick. Lon. 18. 29. E. Lat. 54. 22. N.

(4.) OLIVA, a town of Spain, in Valencia.

OLIVARES, or } a town of Spain in Old Caf-
(1.) OLIVAREZ. } tile; 18 m. SE. of Valladolid.

(2.) OLIVAREZ, Gaſper de Guzman, Count of, favourite and miniſter to Philip IV. of Spain, about 1620; a man of great parts and boundleſs ambition. Philip no ſooner became king, than he became the *ſubject* of this his favourite. The king had abilities, but whilſt he ſpent his time in inactivity, the whole government was under the direction of Olivarez. The count, on the moſt plauſible pretexts, removed all ſuch as he thought ſtood in his way; and ſometimes perſecuted his rivals even to death, of which Don Rodrigo Calderona was a melancholy inſtance, which excited univerſal compaſſion. He perſecuted the former miniſtry for their puſillanimity in the management of affairs; he therefore thought it neceſſary to purſue new meaſures. By his imprudent conduct, he provoked the reſentment of the moſt powerful ſtates, particularly England, France, and Holland, to conſpire againſt Spain. Olivarez, however, never loſt his credit; for though Spain was put to the ſevereſt trials, it acquired a degree of fame which, in the general opinion, overbalanced its loſſes. Olivarez too was fortunate in making the peace; wherein he gained conſiderable advantage over Richelieu, ſo that things appeared to be ſtill in a favourable train. But, in 1627, he again drew Spain into a war with Mantua, contrary to the ſentiments of the wiſeſt politicians; from which is juſtly dated its declenſion. He endeavoured to break the alliances of the duke of Mantua by various ſtratagems; but they did not ſucceed. He had ſoon after this another cauſe of mortification, on Richelieu (whom he conſidered as his enemy,) being created a duke and peer of France, and admitted among the Venetian nobility. The people at length began to be diſpleaſed with his conduct; which in many inſtances was cruel and deteſtable. Spain, however, was ſo unuſually ſucceſsful, that the faults of the miniſter were overlooked for the time; which rendered him more inſolent and obſtinate than ever. He had ſet his heart on the reduction of Caſal in Italy, but the Spaniſh army was totally defeated. The revolt of the Catalans, whom he wiſhed to deprive of their privileges, was the next conſequence of his folly: he employed the Marquis de los Velez to quell this rebellion; but the cruelty of the meaſures uſed for this purpoſe only inflamed it the more. The revolution of Portugal, another diſaſtrous event, was alſo the reſult of his obſtinacy and rigour. The great ſecret, by which Olivarez had governed his maſter, was being the confident of his pleaſures. While he aſſumed a ſpecious appearance of religion, he was not only immerſed in vice himſelf, but encouraged it in his prince. Among other miſtreſſes, he procured for him the fair actreſs Calderona. By this woman he had a ſon, named *Don Juan of Auſtria*, whom, in the 14th year of his age, he appointed generaliſſimo of the army againſt Portugal; while the heir apparent to the crown, Don Balthaſar, was left under the tuition, or *cuſtody*, of the counteſs of Olivarez; at which conduct the queen was chagrined, and the people enraged. His ſchemes now began to be defeated everywhere, and he fell under the diſpleaſure of the emperor, the grandees, and the people all at once. His ill fortune did not, however, wholly overpower him; he was obliged to conceal himſelf, to avoid the rage of the populace; but he had ſtill the confidence to publiſh an *Apology for his conduct*, which poſſeſſed a conſiderable ſhare of wit and humour, tempered with ſpirited and maſterly reaſoning. This, however, did not prevent his being baniſhed to Toro, where, worn out by infirmities, he died in 1645.

OLIVAS, a town of Portugal, in Beira.

* OLIVASTER. *adj.* [*olivaſtre*, Fr.] Darkly brown; tawny.—The countries of the Abyſenes, Barbary, and Peru, where they are tawny, *olivaſter*, and pale, are generally more ſandy. *Bacon's Natural Hiſtory.*

(1.) OLIVE, Peter John, a French monk, was born in 1247, and died in 1297, aged 50. After his death his body was dug up, and he was condemned as a heretic, for having advanced, in his writings, "That the Pope was the myſtical antichriſt; that St Francis was the angel in the Revelations ſaid to have the mark of the living God, and that his rule was the true goſpel; that the perfect ſtate of the church began with St Francis; and that Chriſt and his apoſtles had no property, either in common or particular, but only the uſufruct of what they enjoy."

(2.) * OLIVE. *n. ſ.* [*olive*, Fr. *olea*, Lat.] A plant producing oil; the emblem of peace; the fruit of the tree.—The leaves are for the moſt part oblong and ever-green; the flower conſiſts of one leaf, the lower part of which is hollowed, but the upper part is divided into four parts; the ovary, which is fixed in the centre of the flower-cup, becomes an oval, ſoft, pulpy fruit, abounding with a fat liquor incloſing an hard rough ſtone. *Miller.*

To thee, heaven, in thy nativity,
Adjudg'd an *olive* branch and laural crown,
As likely to be bleſt in peace and war. *Shak.*

In the purlews of this foreſt, ſtands
A ſheepcote fenc'd about with *olive* trees. *Shak.*
—In like manner thou ſhalt deal with thy vineyard, and *olive*-yard. *Ex.* xxiii. 11.—

Their *olive* bearing town. *Dryden's Æneid.*
—It is laid out into a grove, a vineyard, and an allotment for *olives* and herbs. *Broome.*

(3.) OLIVE, in botany. See OLEA.

(4.) OLIVES, MOUNT OF. See OLIVET, N° 1.

(5.) OLIVE, SPURGE. See DAPHNE, N° II, § 5.

(6.) OLIVE, WILD. See ELÆAGNUS, N° I.

(7.) OLIVE, WILD, OF BARBADOES. See BONTIA.

OLIVE-COLOUR, a yellow mingled with black.

OLIVEIRA, two towns of Portugal, in the province of Beira; thus diſtinguiſhed:

1. OLIVEIRA DO BAIRRO, 7½ miles SE. of New Braganza, and 21 N. of Coimbra:

2. OLIVEIRA DO CONDE, 12 miles SW. of Viſeu, and 30 ENE. of Coimbra.

OLIVENCA, or } a diſtrict of Portugal, in
(1.) OLIVENZA, } Alentejo, watered by the Guadiana, on the borders of Spain. Its population is above 4,500. It was ceded to Spain, in 1801.

(2.) OLI-

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(2.) OLIVENZA, a ſtrong town and citadel, in the above diſtrict, on the left bank of the Guadiana, 13 miles S. of Elvas, and 40 E. of Evora. It was taken by the Spaniards, and its diſtrict overrun, on the 20th May 1801, after a battle, in which 100 Spaniards are ſaid to have put 1000 Portugueſe to flight. Lon. 7. 4. W. Lat. 38. 30. N.

OLIVE OIL. The oil is undoubtedly that part of the produce of olive trees which is of greateſt value. The quality of it depends on the nature of the ſoil where the trees grow, on the kind of olive from which it is expreſſed, on the care which is taken in the gathering and preſſing of the fruit, and likewiſe on the ſeparation of the part to be extracted. Unripe olives give an intolerable bitterneſs to the oil; when they are over ripe, the oil has an unguinous taſte: it is therefore of importance to chooſe the true point of maturity. When the ſituation is favourable, thoſe ſpecies of olives are cultivated which yield fine oils; otherwiſe they cultivate ſuch ſpecies of trees as bear a great quantity of fruit, and they extract oil from it, for the uſe of ſoaperies, and for lamps. They gather the olives about November or December. It is beſt to put them as ſoon as poſſible into baſkets, or into bags made of wool or hair, and to preſs them immediately, to extract a fine oil. Thoſe who make oil only for ſoaperies, let them remain in heaps for ſome time in their ſtorehouſes; when afterwards preſſed, they yield a much greater quantity of oil. Thoſe even who extract oil to be uſed in food, ſometimes allow them to ferment in heaps, that they may have more oil; but this is extremely hurtful to the quality of the oil, and is the reaſon why fine oil is ſo very rare. M. Duhamel recommends not to mix ſound olives with thoſe in which a fermentation has already begun, and ſtill leſs with ſuch as are putrified: in both caſes, the oil which is extracted is of a bad quality, and unfit for preſervation. To have the oil in its purity, we muſt allow it to depoſit its ſediment, and then pour it off into another veſſel. The oil extracted from the pulp only of olives is the moſt perfect which can be obtained, and will keep for ſeveral years; but that which is extracted from the kernel only, or from the nut, or from the whole olive, ground in the common way in public mills, has always more or fewer defects, loſes its limpidity in a certain time, and is very apt to become rancid. Care muſt be taken likewiſe to keep it in proper veſſels well ſhut. After all, in the courſe of time, olive-oil loſes its qualities, becomes diſagreeable to the taſte and ſmell, diminiſhes in fluidity, and at length thickens conſiderably. The refuſe of the firſt preſſing, when ſqueezed a ſecond time, yields an oil, but thicker and leſs pure than the former. What remains after the 2d preſſing, when mixed with a little water and placed in a pan over the fire, produces by preſſure a 3d oil, but of a very inferior quality. What remains after all the oil is expreſſed, is termed *grignon*, and is of no farther uſe but as fuel. The ſediment, or *faces*, of new oil, we name after the ancients, *amurca*: it is an excellent remedy in rheumatic affections. In Paris the wax uſed for ſhoes is commonly made of the dregs of defecated oil and ſmoke-black. Oil of olives is an ingredient in the compoſition of many balſams, ointments, plaſters, mollifying and relaxing liniments. It is of an emollient and ſolvent nature; mitigates gripes, and the pains accompanying dyſentery: and is one of the beſt remedies when one has chanced to ſwallow corroſive poiſons; but it by no means prevents the fatal accidents which enſue from the bite of a ſnake, as has been pretended. It is an effectual cure, M. Bourgeois tells us, for the ſtings of waſps, bees, and other inſects. A bandage ſoaked in the oil, is immediately applied to the ſting, and a cure is obtained without inflammation or ſwelling. Olive oil is of no uſe in painting, becauſe it never dries completely. The beſt ſoap is made of it, mixed with Alicant ſalt-wort and quick lime.

OLIVE-PRESS, *n. ſ.* a machine for obtaining olive oil. (See *Plate* CCXLVIII.) For this purpoſe, the olives are firſt bruiſed in a rough trough, under a mill-ſtone, rolling perpendicularly over them; and when ſufficiently maſhed, put into the maye or trough, *m*, of an olive-preſs, where *aa* are the upright beams or cheeks; *b*, the female, and *c*, the male ſcrew; *f*, the board on which the ſcrew preſſes; *g*, a cubical piece of wood, called a *block*; *h*, the peel, a circular board, to be put under the block. By turning the ſcrew, all the liquor is preſſed out of the maſhed olives, and is called *virgin oil*; after which, hot water being poured upon the remainder in the preſs, a coarſer oil is obtained. Olive oil keeps only about a year, after which it degenerates.

(1.) OLIVER, Iſaac, an Engliſh painter, born in 1556, eminent both for hiſtory and portraits. Several of his miniatures are in the collections of our nobility and gentry. His drawings are finiſhed to an extraordinary degree of perfection; many being copies after Parmegiano. Rubens and Vandyck painted James I. after a miniature of Oliver's. He died in 1617.

(2.) OLIVER, Peter, the ſon and diſciple of Iſaac, was born in 1601. He arrived at a degree of perfection in miniature portraits, ſuperior to his father and all his cotemporaries. In the collections of Charles I. and James II. there were 13 hiſtorical ſubjects painted by this Oliver; of which 7 are ſtill preſerved in the cloſet of queen Caroline at Kenſington. He died in 1660.

(3.) OLIVER, a learned Engliſh Benedictine monk, born at *Malmſbury*, in the 11th century. Like Dædalus he invented artificial wings, but in attempting to fly with them from a high tower, he fell and broke his legs. He died A. D. 1060.

(4.) OLIVER, William, M. D. an eminent Engliſh phyſician, who practiſed with ſucceſs many years at Bath, and wrote a *Treatiſe on the Virtues of the Bath Waters*. He aſſiſted the celebrated NASH in procuring the eſtabliſhment of the Bath Hoſpital. He was during the greater part of his life a zealous infidel, but a ſhort time before his death became a penitential convert to Chriſtianity. He died in 1764.

(5.) OLIVER CROMWELL. See CROMWELL, N° 1.

OLIVERO, a river of Sicily, which runs into the ſea, between Patti and Milazzo.

(1.) OLIVET, or MOUNT OF OLIVES, in ancient geography, was ſeated to the E. of Jeruſalem,

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ſalem, and parted from it only by the brook Kidron and the valley of Jehoſhaphat, which ſtretches out from N. to S. It was upon this mount that Solomon, in his dotage, built temples to the gods of the Ammonites (1 Kings xi. 7.) and of the Moabites, out of complaiſance to his wives, who were natives of theſe nations. Hence mount Olivet is called the *mountain of corruption* (2 Kings xxiii. 13.) Joſephus ſays that this mountain is at the diſtance of five ſtadia or furlongs, from Jeruſalem, which make 625 geometrical paces, or the length of a Sabbath day's journey, ſays St Luke. (Acts i. 12.) It had three ſummits, or was compoſed of 3 ſeveral mountains, ranged from N. to S. The middle ſummit is that from whence our Saviour aſcended into heaven. It was upon that towards the S. that Solomon built temples to his idols. The ſummit which is moſt to the N. is diſtant two furlongs from the middlemoſt. This is the higheſt of the three, and is commonly called Galilee. In the time of king Uzziah, the Mount of Olives was ſo ſhattered by an earthquake, that half of the earth on the W. fell down, and rolled four furlongs or 500 paces from thence, towards the mountain which was oppoſite to it on the E. ſo that the earth blocked up the highways, and covered the king's gardens. Mr Maundrell tells us, that he and his company going out of Jeruſalem at St Stephen's gate, and croſſing the valley of Jehoſhaphat, began immediately to aſcend the mountain; that being got above two 3ds of the way up, they came to certain grottos cut with intricate windings and caverns under ground which were called the ſepulchres of the prophets; that a little higher up were 12 arched vaults under ground, ſtanding ſide by ſide, and built in memory of the apoſtles, who are ſaid to have compiled their creed in this place; that 60 paces higher they came to the place where Chriſt uttered his prophecy concerning the deſtruction of Jeruſalem: that ſomewhat higher is the cave of a ſaint called *Pelagia*; a little above that a pillar denoting the place where the angel gave the Bleſſed Virgin three days warning of her death; and at the top of all, the place of our Bleſſed Lord's aſcenſion.

(2.) OLIVET, a town of France, in the dep. of the Loiret, on the S. bank of the Loire, 3 miles S. of Orleans.

(3.) OLIVET, Joſeph, a learned French writer, born in 1682. He entered early into the ſociety of the Jeſuits, but left it in 1715. He then went to Paris, where he became ſo eminent in literature that he was choſen a member of the French Academy, merely on account of his merit. He publiſhed an excellent edition of Cicero's works in 9 vols 4to. He wrote alſo *Hiſtoire de l'Academie Françoiſe*, and ſeveral other works. He died 1672.

OLIVETAN, Robert, a printer, related to Calvin, who printed at Neufchatel in 1535, in folio, a verſion of the Bible in French, the firſt which had been tranſlated from the original Hebrew and Greek. It is written in an uncouth and barbarous ſtyle, and is far from being faithful. The characters in which it is printed are Gothic, and the language is no leſs ſo. It is valued only becauſe it is rare. Olivetan ſurvived his publication but a ſhort time; for he was poiſoned at Rome the year after, of which his tranſlation is alleged to have been the cauſe. Olivetan' Bible, reviſed by John Calvin and N. Malinger, was reprinted at Geneva, in 1540, in 4to. This edition is ſtill rarer than the former. It is called the *Bible de l'Epée*, becauſe the printer had a ſword in his ſign.

OLIVEYRA, Chevalier Francis De, a native of Liſbon, of an ancient and honourable family, born about 1700. He ſtudied at Liſbon under the celebrated F. Pinto. The active part of his life was ſpent amidſt the hurry of an intriguing court; and he was employed by the king of Portugal in ſeveral important embaſſies. He publiſhed an account of his *Travels and Tranſactions*, in ſeveral volumes, in Portugueſe. When he had reſolved, from conviction, to profeſs the Proteſtant religion, he went to Holland and afterwards to England, where he lived in an eaſy retirement from 1744 to 1783, when he died, Oct. 14. His wife was a native of Jerſey. When the earthquake happened at Liſbon in 1756, he publiſhed a conſolatory pamphlet, entitled *Diſcours Pathetiques addreſſee a mes Compatriotes*, in 4to. He alſo wrote ſeveral other valuable tracts in French.

OLIVIENTO, a river of Naples.

OLIVIER, Claude Matthew, advocate of the parliament of Aix, was born at Marſeilles in 1701, and appeared at the bar with eclat. He had a chief hand in the eſtabliſhment of the academy of Marſeilles, and was one of its original members. He poſſeſſed a quick and lively genius. He died in 1736, at the age of 35. He publiſhed 1. *L'Hiſtoire de Philippe roi de Macedoine, et pere d' Alexandre le Grande*, 2 vols. 12mo. 2. *Mémoire ſur les ſecours donnés aux Romains, par les Marſeillois, pendant la 2de Guerre Punique.* 3. *Mémoire ſur les ſecours donnés aux Romains, par les Marſeillois, durant le Guerre contre les Gaulois.*

OLIZAROWSTOW, a town of Poland, in the palatinate of Brzeſk; 14 miles E. of Brzeſk.

OLIZON, an ancient town of Theſſaly, in Magneſia. *Homer.*

OLKUSZ, a town of Poland in Cracow.

OLLBRUCK, a ci-devant lordſhip of Germany, in the late electorate of Cologn, now included in the French empire, and department of the Sarre.

OLLBRUCKEN, a town of the French empire, in the dep. of Sarre, late capital of Ollbruck; 10 m. NW. of Andernach, and 18 of Coblentz.

OLLERIA, a town of Spain in Valencia, 5 miles S. of St Felipe.

OLLIERGUE, a town of France, in the dep. of Puy de Dome, 9 miles NNW. of Ambert, and 24 ESE. of Clermont.

OLLIUS, a river of Italy, now the OGLIO.

OLME, a town of France, in the dep. of Puy de Dome, 10 miles S. of Thiers.

OLMEDA. See OLMEDO.

OLMEDILLA, a town of Spain, in Leon.

OLMEDO, a town of Spain, in Old Caſtile, on the Adaja, 16 miles S. of Cuenza, and 30 of Valladolid. It has 7 churches, and had anciently very ſtrong walls, which ſtill partly incloſe it, and extend about 2 miles. Lon. 4. 29. W. Lat. 41. 20. N.

OLMETA, and OLMETTA, 2 towns of France, in the department and iſland of Corſica:

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Corfica, the former 7 miles W. of Tallano; the latter 1½ SW. of Oletta.

OLMUTZ, a town of Germany, in Moravia, with a bishop's ſee, and a famous univerſity. The public buildings are very handſome, particularly the ci-devant Jeſuits college. It is a populous, trading, and very ſtrong place; and yet it was taken, with the whole garriſon, by Frederick II. of Pruſſia in 1741. In July 1758 he beſieged it again; but when he had almoſt taken it he was obliged to raiſe the ſiege to meet the Ruſſian army. It is ſeated on the Morava, 80 miles N. by E. of Vienna. Lon. 17. 35. E. Lat. 49. 30. N.

OLNEY, a town of Buckinghamſhire, ſeated on the Ouſe, 12 miles NE. of Northampton, and 50 NNW. of London. Lon. 0. 54. W. Lat. 52. 5. N.

OLOCENTROS, in natural hiſtory, a name given by the old Greeks to a ſmall animal of the ſpider kind, whoſe bite was accounted mortal. It is the ſame with the SOLIFUGA, ſo called from its ſtinging or biting moſt violently, in places or ſeaſons, where the ſun had the moſt power, as Africa, &c. The name *ſolifuga* was a corrupt way of writing that word; and *alocentros* ſeems alſo a falſe way of writing *heliocentros*, which ſignifies the ſame as *ſolipuga*.

(1.) OLON, or } or OLONE, a river of Italy,
(1.) OLONA, } which riſes near the Lake of Lugano, paſſes Milan, and falls into the Po between St Zenone and Port Morono, 18 miles W. of Placentia.

(2.) OLONA, or } a department of Italy, ſo
(2.) OLONE, } named from the above river, (N° 1.) which runs through it; comprehending the ci-devant duchy of the MILANESE. On May 13th 1801, it was found, by the general cenſus then taken of the population, to contain 526,234 citizens; and was ſubdivided into 4 diſtricts, called MILAN, PAVIA, MONZA, and *Gallarate*, from their reſpective capitals.

(3—6.) OLONE, or OLONA, an iſland, town, fort, and harbour of France, in the dep. of the Vendee, and ci-devant prov. of Poitou, 30 miles NW. of Rochelle, and 258 SW. of Paris. Lon. 1. 43. W. Lat. 46. 30. N.

OLONEI, an iſland on the S. coaſt of Nova Zembla, in the ſtraits of Vaigatſkoi.

(1.) OLONETZ, a town of Ruſſia, capital of Olonetſkoi, built by Peter the Great. It has mines of copper and iron, an iron manufactory, and a mineral ſpring; and is ſeated on the Olonza, 104 miles NE of Peterſburg, and 364 NW. of Moſkow. Lon. 34. 20. E. Lat. 46. 30. N.

(2.) OLONETZ, or } a province or government
OLONETSKOI, } of Ruſſia, bounded on the N. by that of Archangel; E. by ditto and the White Sea, S. by Novogorod and Vologda, and W. by Viburg and Finland; about 340 miles long from N. to S. and 240 broad, where broadeſt, from E. to W. but about 100 along the coaſt of the White Sea. Lon. 46° to 59° E. of Ferro. Lat. 61° to 66° 40' N.

OLONNE. See OLONE, § 3—6.

OLONSKA, a town of Ruſſia, in Irkutſk.

OLONZA, a river of Ruſſia, in Olonetſkoi, which runs into the E. ſide of Lake Ladoga.

OLONZAC, a town of France, in the dep. of Herault; 15 m. S. of St Pons, and 21 W. of Beziers.

OLOONSON, an ancient town of Magneſia; now called *Aleſione*. Homer.

OLOPHYXUS, a town of Macedonia, on Mount Athos.

OLOSOTAI, a town of Aſia, in Hami.

OLOST, a town of Spain, in Catalonia.

OLOSTELESEK, a town of Tranſylvania.

OLOT, a town of Spain, in Catalonia, 17 miles NW. of Gerona.

OLPE, a town of Germany, in the circle of the Lower Rhine, 37 miles E. of Cologn, and 50 ESE. of Duſſeldorf.

OLPHEN, a city of Germany, in the ci-devant biſhopric of Munſter, now ſecularized; firſt allotted to the King of Pruſſia, by Bonaparte's deciſion of the indemnities, on the 24th Aug. 1802. and now forming a part of the kingdom of Weſtphalia. It is 17 miles SSW. of Munſter.

(1.) OLRICK, [*Norweg.* i. e. *the ſon of Erick.*] A pariſh of Scotland, in Caithneſs, 4 miles long and 2 broad. The ſurface is neither hilly nor quite level; and even the moſt uncultivated parts afford excellent paſture for cattle. The air is pure, but to render it perfectly ſalubrious, ſome marſhes and lakes would require to be drained. The ſoil is a deep clay without ſand and till. The crops are barley, potatoes, flax, and oats, which laſt are much eſteemed for ſeed. About 4000 bolls are exported. Huſbandry is much improved. The population, in 1793, was 1001; increaſe 126, ſince 1755. The number of ſheep was about 1350. Horſes, ſwine, and black cattle, are alſo reared. Lime-ſtone, free-ſtone, grey ſlates, &c. abound. The chief gentlemens ſeats are Blue ſtage Murkle, Caſtlehill, and Olrick.

(2.) OLRICK, a hill in the above pariſh, which affords a moſt extenſive proſpect, and on which there are veſtiges of a watch-tower.

OLSCHANKA, a town of Ruſſia, in Ekaterinoſlaf; 40 miles SW. of Novo-Mirgorod.

OLSCHWIZ, a town of Bohemia.

OLSDORP, a town of Holſtein.

OLSE, or OELSE. See OELSE.

OLDSZTYN, a town of Poland, in Cracow.

OLTEN, a town and ci-devant bailiewick of Switzerland, in Soleure, on the Aar; 17 miles ENE of Soleure.

OLTERSPACH, a town of Stiria.

OLTRI, a town in Friuli; 24 miles E. of Cadora, and 38 NW. of Friuli.

OLUS, an ancient town of Crete.

OLUTOR, a river of Ruſſia, which runs into the North Pacific Ocean.

OLUTOROVSCOI, a town of Ruſſia, on the Olutor; 164 miles E. of Oklanſk.

OLWYE, a river of Monmouthſhire, which runs into the Uſk, near the town of Uſk.

OLYBRIUS, Flavius Anicius, emperor of the Eaſt after Anthemius, and ſon-in-law of the emperor Leo I. He was ſlain by the Goths, who placed Glycerius on the throne A. D. 472.

OLYKA. See OLIKA.

OLYMPENA. See OLYMPUS.

OLYMPEUM, a ancient towns, in Delos and Syracuſe.

(1.) OLYMPIA, in ancient geography, a town of Elis, or *Olympia Piſatis*, according to Strabo, ſo called from the territory of Piſa in Elis; is deſcribed

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bed by Strabo, "as the temple of Jupiter Olympius, before which ſtands a grove of wild olive trees, in which is the ſtadium or foot-courſe, ſo called becauſe the 8th part of a mile; and by which the Alpheus, coming down from Arcadia, runs." Olympia was famous alſo for a temple of Juno, 63 feet long, with columns round it of the Doric order; and a *Metroum* or temple of the mother of the gods, a large Doric edifice; with holy treaſuries. Theſe, and the porticoes, a gymnaſium, prytaneum, and many more buildings, chiefly in the incloſure, with the houſes of the prieſts and other inhabitants, made Olympia a conſiderable place. The ſtadium was in the grove of wild olive trees, before the great temple; and near it was the HIPPODROME, or courſe for horſe and chariot races. The temple of Jupiter was of the Doric order, 68 feet high to the pediment, 95 wide, and 230 long; the cell encompaſſed with columns. It was erected with the country ſtone; the roof, not of earth baked, but of Pentelic marble; the ſlabs diſpoſed as tiles; the way to it up a winding ſtaircaſe. The two pediments were enriched with ſculpture; and one had over the centre a ſtatue of Victory gilded, and underneath a votive buckler of gold. At each corner was a gilded vaſe. Above the columns were fixed 21 gilded bucklers, offered, at the concluſion of the Achæan war, by the Roman general Mummius. The gates in the two fronts were of braſs, and over them were carved the labours of Hercules. Within the cell were double colonnades, between which was the approach to the image. The Jupiter of Olympia immortalized its maker PHIDIAS. It was of ivory and gold, the head crowned with olive. In the right hand was a ſtatue of Victory; in the left a flowered ſceptre, compoſed of various metals, on which was an eagle. The ſandals were of gold, as alſo the veſtment, which was curiouſly emboſſed with lilies and animals. The throne was gold inlaid with ebony and ivory, and ſtudded with jewels, intermixed with paintings and exquiſite figures in relievo. The pillars between the feet contributed to its ſupport. Before it were walls, ſerving as a fence, decorated principally with the exploits of Hercules; the portion oppoſite to the door of a blue colour. It was the office of a family deſcended from Phidias, called PHAEDRUNTÆ, or *the poliſhers*, to keep the work bright and clean. The veil or curtain was cloth rich with the purple dye of Phœnicia, and with Aſſyrian embroidery, an offering of king Antiochus, and was let down from above by ſtrings. The image appeared higher and broader than it meaſured. Its magnitude was ſuch, that though the temple was very large, the artiſt ſeemed to have erred in the proportions. The god ſitting nearly touched the ceiling with his head. A part of the pavement before it was of black marble, incloſed in a rim of Parian or white, where they poured oil to preſerve the ivory. The altar of Jupiter Olympius was of great antiquity, and covered with aſhes from the thighs of the victims, which were carried up and conſumed on the top with wood of the white poplar tree. The aſhes alſo of the prytaneum, in which a perpetual fire was kept on a hearth, were removed annually on a fixed day, and ſpread on it, being firſt mingled with water from the Alpheus. The cement was made with that fluid only; and therefore this river was eſteemed the moſt friendly of any to the god. On each ſide of the altar were ſtone ſteps. Its height was 22 feet. Girls and women were allowed to aſcend the baſement, which was 125 feet in circumference. The people of Elis ſacrificed daily, and private perſons as often as they choſe. Many deities were worſhipped beſides Jupiter. Pauſanias has enumerated above 60 altars of various ſhapes and kinds. One of the unknown gods ſtood by the great altar. The people of Elis offered on all theſe monthly; laying on them boughs of olive, burning incenſe, and wheat mixed with honey; and pouring libations of ſuch liquors as the ritual preſcribed. At the later ceremony ſometimes a form of prayer was uſed, and they ſung hymns compoſed in the Doric dialect. Olympia was ſituated on an eminence, between two mountains called *Oſſa* and *Olympus*. Though its ancient ſplendour is gone, the place reminds the traveller of what it once was. It is in the Morea, and is now a ſmall place, called LANGANICO, 50 miles S. of Lepanto. Lon. 22. 0. E. Lat. 37. 40. N.

(2.) OLYMPIA, *plur.* See OLYMPIC GAMES.

(3.) OLYMPIA MALDACHINI, Donna, a woman of a very uncommon character. She flouriſhed about the middle of the 17th century. She was ſiſter-in-law to Pope Innocent X. and acquired an unlimited power over this vain and weak eccleſiaſtic. Her avarice and ambition were unbounded: ſhe diſpoſed of all benefices, which were kept vacant till ſhe informed herſelf of their value: ſhe rated an office of 1000 crowns for three years at one year's revenue, and if for life, at 12 years purchaſe, one half of which ſhe required to be paid in advance: ſhe gave audience upon public affairs, enacted new laws, and ſat in council with Innocent, with bundels of memorials in her hands. It was ſaid that they lived together in a criminal correſpondence. On the election of Pope Alexander VII. a number of memorials were ſent in againſt her, and he baniſhed her from Rome, and began to examine witneſſes reſpecting her conduct. She was cut off, however, before the trial was finiſhed, by the plague in 1636. Her immenſe property was not confiſcated; the pope only reſerving for his own relations about a million of crowns.

OLYMPIAD, } the ſpace of four years,
(1.) OLYMPIAS, } whereby the Greeks reckoned time.—The firſt Olympiad fell, according to the moſt accurate and learned computations, exactly 776 years before the firſt year of Chriſt, or 775 before that of his birth, in the year of the Julian period 3938, and 22 years before the building of Rome. The games were exhibited at the time of the full moon next after the ſummer ſolſtice; therefore the Olympiads were of unequal length, becauſe the time of the full moon differs 11 days every year, and for that reaſon they ſometimes began the next day after the ſolſtice, and at other times four weeks after. The computation by Olympiads ceaſed, as ſome ſuppoſe, after the 364th, in the year 440 of the Chriſtian era. It was univerſally adopted, not only by the Greeks, but by many of the neighbouring countries; though ſtill the Pythian games ſerved as an epoch to the people

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ple of Delphi; and to the Boeotians the Nemean games to the Argives and Arcadians; and the Isthmian to the Corinthians and the inhabitants of the Peloponnesian Isthmus. To the Olympiads history is much indebted. They have served to fix the time of many momentous events; and indeed before this method of computing time was observed, the history of Greece is mostly fabulous, and filled with obscurity, contradiction, and anachronism.

(2.) Olympias, a celebrated princess, daughter of Alexander I. king of Epirus, who married Philip II. king of Macedonia, by whom she had Alexander the Great. Her haughtiness, and probably her infidelity, obliged Philip to repudiate her, and to marry Cleopatra, the niece of king Attalus. Olympia and Alexander showed their disapprobation of this measure, by retiring from court. The murder of Philip soon followed, (see Macedon, § 9.) which some attribute to the intrigues of Olympias, who paid the greatest honour to her husband's murderer. She gathered his mangled limbs, placed a crown of gold on his head, and laid his ashes near those of Philip. The administration of Alexander was in some instances offensive to Olympias; but when the ambition of her son was concerned, she declared publicly that Alexander was not the son of Philip, but the offspring of Jupiter, who in the form of an enormous serpent, had introduced himself into her bed. When Alexander was dead, Olympias seized the government of Macedonia; and, to establish her usurpation, she cruelly put to death Aridæus, with his wife Eurydice, Nicanor the brother of Cassander, with 100 leading men of Macedon, who were inimical to her interest. These barbarities did not long remain unpunished: Cassander besieged her in Pydna, where she had retired with the remains of her family, and she surrendered after an obstinate siege. The conqueror ordered her to be put to death. A body of 200 soldiers were ordered to put the bloody commands into execution, but the splendour and majesty of the queen disarmed their courage. She was at last massacred by those whom she had cruelly deprived of their children, about A.A.C. 316. See Macedon, § 17.

(3.) Olympias, a fountain of Arcadia, which flowed the one year, and the next became dry. *Paus.* viii. 29.

(1.) OLYMPIC, *adj.* Of or belonging to Olympia, the games held there, or to Jupiter Olympius, or Mount Olympus.

(2.) Olympic Games, solemn games among the ancient Greeks, so called from *Jupiter Olympius*, to whom they were dedicated; and said to have been first instituted by him, after his victory over the sons of Titan: Others ascribe their institution to Hercules, the son of Alcmena; others to a Hercules of much greater antiquity; others to Pelops. But by whomsoever they were instituted, at a period rather early they had fallen into disuse. The wars which prevailed among the Greeks had totally interrupted the religious ceremonies and exhibitions with which they had been accustomed to honour their common gods and heroes; but the Olympic games were restored by *Iphitus*, a descendant of Oxylus, to whom the province of Elea had fallen in the general partition of the peninsula. The festival, which lasted five days, began and ended with a sacrifice to Olympian Jove. The intermediate time was chiefly filled up by the gymnastic exercises, in which all freemen of Grecian extraction were invited to contend, provided they had been born in lawful wedlock, and had lived untainted by any infamous immoral stain. The preparation for this part of the entertainment was made in the gymnasium of Elis, a spacious edifice, surrounded by a double range of pillars, with an open area in the middle. Adjoining were various apartments, containing baths and other conveniences for the combatants. The neighbouring country was adorned with porticoes, shady walks and groves, interspersed with seats and benches; the whole, originally destined to relieve the fatigues and anxiety of the candidates for Olympic fame; and frequented in later times, by sophists and philosophers, who were fond to contemplate wisdom, and communicate knowledge, in those delightful retreats. The order of the athletic exercises or combats was established by Lycurgus, and corresponded almost exactly to that described by Homer, in the 23d book of the Iliad, and 8th of the Odyssey. Iphitus appointed the other ceremonies and entertainments; settled the regular return of the festival at the end of every 4th year, in July; and gave to the whole solemnity that form and arrangement which it preserved, with little variation, above 1000 years; a period exceeding the duration of the most famous kingdoms and republics of antiquity. Among the benefactors of Olympia, at a much later period, was reckoned Herod, afterwards king of Judea. Seeing, on his way to Rome, the games neglected or dwindling into insignificance from the poverty of the Eleans, he displayed a vast munificence as president, and provided an ample revenue for their future support and dignity. The care and management of the Olympics belonged for the most part to the Eleans; who on that account enjoyed their possessions without molestation, or fear of war or violence. They appointed a certain number of judges, who were to take care that those who offered themselves as competitors should perform their preparatory exercises; and these judges, during the solemnity, sat naked, having before them a crown of victory, formed of wild olive, which was presented to whomsoever they adjudged it. Those who were conquerors were called Olympionicæ, and were loaded with honours by their countrymen. At these games women were not allowed to be present; and if any woman was found, during the solemnity, to have passed the river Alpheus, she was to be thrown headlong from a rock. This, however, was sometimes neglected; for we find not only women present at the celebration, but also some among the combatants, and some rewarded with the crown. The preparations for these festivals were great. No person was permitted to enter the lists, if he had not regularly exercised himself ten months before the celebration at the public gymnasium of Elis. No unfair dealings were allowed; whoever attempted

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tempted to bribe his adversary, was subjected to a severe fine; and even the father and relations were obliged to swear, that they would have recourse to no artifice which might decide the victory in favour of their friends. No criminals, nor such as were connected with impious and guilty persons, were suffered to present themselves as combatants. The wrestlers were appointed by lot. Some little balls superscribed with a letter were thrown into a silver urn, and such as drew the same letter were obliged to contend one with the other. He who had an odd letter remained the last; and he often had the advantage, as he was to encounter the last who had obtained the superiority over his adversary. In those games were exhibited running, leaping, wrestling, boxing, and throwing the quoit, which was called altogether πεντάθλον, or QUINQUERTIUM. There were also horse and chariot races, and contentions in poetry, eloquence, and the fine arts. The only reward that the conqueror obtained was a crown of olive. This, as some suppose, was in memory of the labours of Hercules, which were accomplished for the universal good of mankind, and for which the hero claimed no other reward but the consciousness of having been the friend of mankind. So small and trifling a reward stimulated courage and virtue, and was the source of greater honours than the most unbounded treasures. The statues of the *Olympionicæ* were erected at Olympia in the sacred wood of Jupiter. Their return home was that of a warlike conqueror; they were drawn in a chariot by four horses, and everywhere received with the greatest acclamations. Their entrance into their native city was not through the gates; to make it more grand and more solemn, a breach was made in the walls. Painters and poets were employed in celebrating their names; and indeed the victories severally obtained at Olympia are the subjects of the most beautiful odes of Pindar. The combatants were naked. A scarf was originally tied round their waist; but when it had entangled one of them, and been the cause that he lost the victory, it was laid aside. The Olympic games were observed every 5th year, or, to speak with greater exactness, after a revolution of 4 years, and in the first month of the 5th year; and they continued for 5 successive days. As they were the most ancient and most solemn of all the festivals of the Greeks, it will not appear wonderful that they drew so many people, not only inhabitants of Greece, but of the neighbouring islands and countries.

OLYMPIODORUS, a peripatetic philosopher of Egypt, born in Thebes, who flourished under Theodosius II. and wrote a history of the eastern empire, in Greek, in 22 books, from the 7th consulship of Honorius, and 2d of Theodosius, to the accession of Valentinian I. He wrote also, 2. A history of an embassy to some of the barbarous nations of the North: 3. Commentaries on the *Meteors* of Aristotle; published by Aldus, in 1550, fol.: and, 4. A life of Plato.

OLYMPIONICÆ, } victors at the Olympic
OLYMPIONICES, } games. See OLYMPIC, § 2.

(1.) OLYMPIUS, a surname of Jupiter.

(2.) OLYMPIUS. See NEMESIANUS.

(1.) OLYMPO, a mountain of European Turkey, in Thessaly, 10 miles N. of Larissa.

(2.) OLYMPO, a mountain of European Turkey, in Natolia, 50 miles NW. of Kiutaja.

(1.) OLYMPUS, a celebrated mountain of Macedonia and Thessaly, now called *Lacha*. The ancients supposed it to be the highest mountain in the world; that its top reached heaven; was the court of Jupiter, and the residence of the gods; and the poets feigned that upon it there were neither clouds, rain, nor wind, but an eternal spring. *Homer, Iliad* 1. *Virg. Ecl.* ii. vi. *Ovid. Met. Lucan, Claudian*, &c. It was also fabled to have been the scene of the battle between the gods and the giants. Its real height is about a mile and a half perpendicular; its top is always covered with snow.

(2—7.) OLYMPUS is also the name of other 5 mountains: viz. 1. bounding Bithynia on the S.: 2. in Cyprus, on whose top was a temple of Venus, which women were not permitted to enter, (*Strabo*): 3. in Galatia, (*Livy*): 4. in Lycia, with a noble cognominal town near the sea coast, (*Strabo, Cicero*), extinct; in Pliny's time there remained only a citadel: the town was destroyed by P. Servilius Isauricus, having been the retreat of pirates (*Florus*). From this mountain there was an extensive prospect of Lycia, Pamphylia, and Pisidia (*Strabo*). 5. In Mysia, (*Ptolemy*); thence surnamed OLYMPENA, anciently *Minor*; one of the highest mountains, and called *Mysus* by Theophrastus; situated on the Propontis, and thence extending more inland.

(7.) OLYMPUS, a physician and historian of Egypt, who was physician to Queen Cleopatra, and wrote some historical tracts. *Plut. in Anton.*

OLYNTHIANS, the inhabitants of Olynthus; a brave people, who, not being supported by the Athenians, were conquered and sold for slaves by Philip II. See MACEDON, § 8.

OLYNTHUS, a celebrated city and republic of Macedonia, on the isthmus of the peninsula of Pallene, once very flourishing, and able to dispute with Athens and Sparta. It was at last destroyed by Philip II. of MACEDON.

OLYRA, in botany, a genus of the triandria order, belonging to the monœcia class of plants; and in the natural method ranking under the 4th order, *Gramina*. The male calyx is a biflorous and aristated glume; the corolla a beardless glume; the female calyx is an uniflorous, patulous, and ovate glume; the style is bifid, and the seed cartilaginous.

OLYRAS, a river near Thermopylæ, which, mythologists pretend, attempted to extinguish Hercules's funeral pile. *Strabo*, ix.

OLYZON, an ancient town of Thessaly.

OLZBERG, a town and bailiewick of Germany, in the palatinate of the Rhine, allotted by Bonaparte in the division of the indemnities, 21st August 1802, to the prince of Hesse-Darmstadt.

OLZOFFSKI, Andrew, LL.D. an eminent Polish divine, born in 1618, and descended of an ancient family in Prussia. Having finished his studies in law and divinity, he went to Rome, and took his degree of LL.D. He went thence to Paris, whence he attended the princess Mary Louisa, on her marriage with Ladislaus IV. K. of Poland,

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Poland, to whom he was made Latin secretary. He attended the election of the emp. Leopold I. as ambassador from Poland, and on return was made prebendary to the crown, bishop of Culm, and afterwards vice-chancellor, and grand chancellor. After the deaths of Ladislaus IV. and Michael, he had a great hand in procuring the election of king John Sobieski, who made him Abp. of Gnesne, and primate of Poland. His right to the primacy being disputed by the Bp. of Cracow, he published a work in defence of his right. He wrote several other tracts; and died at Dantzick, whither he had gone to settle some disputes between the senate and people, in 1678, aged 60.

OM, a river of Russia, which runs into the Irtisch at Omsk.

(1.) OMA, one of the MOLUCCA ISLANDS, about 9 miles long, and 6 broad, containing 11 villages, and about 5000 people.

(2.) OMA, the capital of the above island.

OMACHIS, a river of Canada, which runs into lake St Peter, 72 miles WSW. of Quebec.

OMAGH, a town of Ireland, in Tyrone.

OMAI. See OTAHEITE.

(1.) OMAN, a province of Arabia Felix, bounded N. by the gulf of Persia, E. by the Ocean, S. and W. by deserts. It is divided among a number of petty sovereigns, called *Schiechs*, the chief of whom is the imam of Oman, whose territories are mountainous to the sea coast. All its rivers but one flow throughout the year, and render the country fertile in barley, lentiles, fruits, grapes, dates, &c. which last are so abundant, that several ship-loads are annually exported; and fish are so plentiful on the coast, that they are often used as manure. It has also lead and copper mines. The people are Mahometans, but of sects as various and opposite as papists and protestants. The chief towns are OMAN (N° 2.) and MASCATE.

(2.) OMAN, one of the capitals of the above province, 60 miles NW. of Mascate. Lon. 57. 20. E. Lat. 24. 0. N.

OMAQUAS, a tribe of American Indians, on the banks of the Amazon, who were converted to Christianity, in 1686, by F. Fritz, a Spanish missionary.

OMAR I. surnamed *Ebn Al Khattab*, successor of Abu Becr, was originally a violent opposer of the Arabian prophet. Mohammed felt this opposition, and regretted it; and it is said by prayer effected the conversion of this his dangerous antagonist. Omar had no sooner read the 20th chapter of the Koran, than he was convinced; upon which he instantly repaired to Mohammed and his followers, and declared his conversion. On the death of Abu Becr, who succeeded the impostor in the regal and pontifical dignities, Omar was raised to the throne. He conquered the Persians, and Jerusalem submitted to his power; nor does he appear to have been checked in a single instance. He was stabbed by a person of the Magian sect while performing his devotions; and after languishing three days, died in the month of Dhu'lhajja, and 23d year of the Hegira, which began A. D. 643, aged 63. The Arab historians say that he reigned between 10 and 11 years. His extensive conquests made the Moslem empire one of the most powerful and formidable monarchies in the world. His disposition is represented as one of the best possible, and his temperance highly extolled.

OMAR II. the 13th caliph of the race of Ommiades, succeeded his cousin Solyman in 717. He laid siege to Constantinople, but was forced to raise it, and his fleet suffered much from a violent tempest. He was poisoned at Emessa, A. D. 720.

OMARA, a river of Brazil, which runs into the sea; in Lon. 36. 0. W. Lat. 5. 0. S.

OMARK, a town of Norway, 38 miles NE. of Frederickstadt.

OMASUIOS, a province or jurisdiction of Buenos Ayres, extending 20 leagues along the banks of lake Titicaca, which bounds it on the W. The climate is cold. Great numbers of cattle are pastured in it.

OMBA, an island of Turkey, in the Adriatic. Lon. 35. 55. E. of Ferro. Lat. 43. 5. N.

OMBI, a city of ancient Egypt, afterwards called *Arsinoe* and *Crocodilopolis*, was the capital of one of the nomes into which that country was divided, and is remarkable, in the annals of idolatry, for the hatred of its inhabitants to the religion of their neighbours the citizens of Tentyra. The cities and nomes of Egypt being at one time prone to rebellion, and to enter into conspiracies against monarchical government, one of their most politic kings contrived to introduce into the neighbouring nomes the worship of different animals; so that, while each reverenced the deity which itself held sacred, and despised that which its neighbours had consecrated, they could hardly be brought to join cordially in one common design to the disturbance of the government. In this distribution of gods, he conferred upon Ombi the *crocodile*, and upon Tentyra the mortal enemy of that monster, the *ichneumon*. The consequence was, that while the Ombites worshipped the crocodile, the Tentyrites took every opportunity of slaughtering him. Thus the mutual hatred of those cities, on account of their hostile gods, rose to such a height, that whenever the inhabitants of the one were engaged in the more solemn rites of their religion, those of the other were sure to embrace the opportunity of setting fire to their houses, and doing them every injury in their power. And this animosity continued between the inhabitants of the two cities long after the crocodile and ichneumon had lost their *divinity*.

OMBLA, a river of Dalmatia, which runs into the Adriatic, a little N. of Ragusa.

OMBO, a town of Egypt, on the E. bank of the Nile; 26 miles N. of Syene.

OMBRA, or OMBRAS. See AMBRAS.

(1.) * OMBRE. *n. s.* [*hombre*, Spanish.] A game of cards played by three.—He would willingly carry her to the play; but she had rather go to Lady Centaur's, and play at *ombre*. *Tatler.*—

When *ombre* calls, his hand and heart are free,
And, join'd to two, he fails not to make three.
Young.

(2.) OMBRE is a game borrowed from the Spaniards, and played by two, by three, or by five persons, but generally by three. When *three* play, 9 cards are dealt to each party; the whole pack being only 40, as the eights, nines, and tens are

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thrown out. There are two ſorts of counters for ſtakes, the greater and the leſſer; the laſt having the ſame proportion to the other as a penny to a ſhilling: of the greater counters each man ſtakes one for the game; and one of the leſſer for paſſing for the hand, when eldeſt, and for every card taken in. As to the order and value of the cards, the ace of ſpades, called *ſpadillo*, is always the higheſt trump, in whatſoever ſuit the trump be; the *manille*, or black duce, is the ſecond; and the *baſto*, or ace of clubs, is always the third: the next in order is the king, the queen, the knave, the ſeven, the ſix, the five, four, and three. Of the black there are 11 trumps; of the red, 12. The leaſt ſmall cards of the red are always the beſt, and the moſt of the black; except the duce and red ſeven, both of which are called the *manilles*, and are always ſecond when the red is a trump. The red ace, when a trump, enters into the fourth place, and is called *punto*; otherwiſe it is only called an *ace*. The three principal cards are called *matadores*; which have this privilege, that they are not obliged to attend an inferior trump when it leads; but for want of a ſmall trump, the perſon may renounce trumps, and play any other card; and when theſe are all in the ſame hand, the others pay three of the greater counters a-piece; and, with theſe three for a foundation, he may count as many matadores as he has cards in an uninterrupted ſeries of trumps; for all which the others are to pay one counter a-piece. He who hath the firſt hand is called *ombre*, and has his choice of playing the game, of naming the trump, and of taking in as many and as few cards as he pleaſes; and after him the ſecond, &c. But if he does not name the trump before he looks on the cards he has taken in, any other may prevent him, by naming what trump he pleaſes. He that has the firſt hand ſhould neither take in, nor play, unleſs he has at leaſt three ſure tricks in his hand: for, as he wins the game who wins moſt tricks, he that can win five of the nine has a ſure game; which is alſo the caſe if he wins four, and can ſo divide the tricks as that one perſon may win two, and the other three. If a perſon plays without diſcarding or changing any cards, this is called *playing ſans prendre*; and if another wins more tricks than he, he is ſaid to *win codille*. The overſights in the courſe of the game are called *beaſts*. And if the ombre wins all the nine tricks, it is called *winning the vole*. In *ombre by five*, which many, on account of its not requiring ſo cloſe an attention, prefer to that *by three*, only eight cards a-piece are dealt; and five tricks muſt be won, otherwiſe the ombre is beaſted. Here the perſon who undertakes the game, after naming the trump, calls a king to his aſſiſtance; upon which the perſon in whoſe hand the king is, without diſcovering himſelf, is to aſſiſt him as a partner, and to ſhare his fate. If, between both, they can make five tricks, the ombre wins two counters, and the auxiliary king only one; but when the counters are even, they divide them equally. If the ombre venture the game without calling in any king, this too is called *playing ſans prendre*; in which caſe the other four are all againſt him, and he muſt win five tricks alone, or be beaſted. The reſt is much the ſame as by three.

(3.) OMBRE DE SOLEIL, or *Shadow of the Sun*, in heraldry, is when the ſun is born in armory, ſo as that the eyes, noſe, and mouth, which at other times are repreſented, do not appear; and the colouring is thin, ſo that the field can appear through it.

OMBRIA, the ancient name of a province of Italy, in the territory of the pope, called alſo UMBRIA, and now SPOLETTO.

OMBRO, or L'OMBRO, a town of Etruria, in the territory of the Siennois, ſituated near the Tuſcan ſea, a little S. of the lake of Caſtiglione, 45 miles SW. of Sienna.

OMBROMETER, *n. ſ.* a machine to meaſure the quantity of rain that falls. See the deſcription and ſign of one in *Phil. Tranſ.* N° 473, p. 12. It conſiſts of a tin funnel, whoſe ſurface is an inch ſquare, with a flat board, and a glaſs tube ſet into the middle of it in a groove. The riſe of the water in the tube, whoſe capacity at different times muſt be meaſured and marked, ſhows the quantity of rain that has fallen.

(1.) OMBRONE, a river of Etruria, which riſes in the Siennese, and falls into the Mediterranean, 5 miles S. of Groſſetto.

(2.) OMBRONE, a town of Etruria, in Sienna, between the mouth of the above river and lake Caſtigliano, 3 miles S. of Groſſetto.

OMEE, an Indian town of the North-Weſtern Territory, belonging to the MIAMIS, at the junction of the Miami and the St Joſeph, on the E. bank of the latter. It was deſtroyed by General Harmar, in 1790.

* OMEGA. *n. ſ.* [ωμεγα.] The laſt letter of the alphabet, therefore taken in the Holy Scripture for the laſt.—I am alpha and *omega*, the beginning and the ending. *Rev.*

OMEGNA, a town of Italy, in the dep. of the Agogna, and diſtrict of Domo d'Oſſola, on the N. coaſt of lake Orta; 15 miles SSE. of Domo d'Oſſola, and 25 NNW. of Novara.

(1.) * OMELET. *n. ſ.* [*omelette*, French.] A kind of pancake made with eggs.

(2.) *The* OMELET, or AMLET, is a kind of fricaſſee of eggs, with other ingredients, very uſual in Spain and France. It may be made as follows: The eggs being beaten, are to be ſeaſoned with ſalt and pepper, and then fried in butter made boiling hot; this done, gravy is to be poured on, and the whole ſtewed with chives and parſley ſhred ſmall: when one ſide is fried enough, it is to be turned on the other.

OMELOVAIA, a town of Ruſſia, in Ekaterinoſlaf, on the Dnieper; 60 miles NE. of Cherſon.

(1.) * OMEN. *n. ſ.* [*omen*, Latin.] A ſign good or bad; a prognoſtick.—Hammond would ſteal from his fellows into places of privacy, there to ſay his prayers, *omens* of his future pacifick temper and eminent devotion. *Fell.*—

When young kings begin with ſcorn of juſtice,
They make an *omen* of their after reign. *Dryd.*

The ſpeech had *omen*, that the Trojan race
Should find repoſe. *Dryden.*

Chooſe out other ſmiling hours,

Such

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Such as have lucky *omens* shed
O'er forming laws and empires rising. *Prior.*

(2.) OMEN, in its proper sense, signifies a sign or indication of some future event taken from the language of a person speaking without any intent to prophecy. Hence Tully says, "the Pythagoreans attend to the discourse not only of gods, but also of men, which they call *omens*." This sort of omen was supposed to depend much upon the will of the person concerned in the event; whence the phrases *accepit omen, arripuit omen*. Such were the original *omens;* but they were afterwards derived from *things* as well as from words. Thus Paterculus, speaking of the head of Sulpicius on the rostrum, says, it was "the omen of an impending proscription." Suetonius says of Augustus, that he believed implicitly in certain omens; and that, "if his shoes were improperly put on in the morning, especially if the left shoe was put upon his right foot, he held it for a bad omen." Omen was used in a still larger sense, to signify an *augury;* as in the following line of Tully: "Thus Jove confirmed the bright omen of the eagle." It was lastly used, in the most generic sense of all, for a portent or prodigy; as in the 3d book of the Æneid, where a myrtle torn up by Æneas dropped blood. Upon this appearance, says the hero,—

Mute and amaz'd, my hair with terror stood;
Fear shrunk my sinews, and congeal'd my blood.

And the same thing being repeated upon his breaking a branch from another tree, he prayed to the gods to avert the *omen*. These portentous or supernatural omens were either external or internal. Of the former sort were those showers of blood so frequently occurring in the Roman history, which were much of the same nature with this adventure of Æneas, which he calls *monstra deûm*. Of the 2d sort were those sudden consternations, which, seizing upon men without any visible cause, were imputed to the agency of the god *Pan*, and hence called *panic fears*. But indeed there was hardly any thing, however trivial, from which the ancients did not draw omens. That it should have been thought a direful omen when any thing befel the temples, altars, or statues of the GODS, need excite no wonder; but that the meeting of an eunuch, a negro, a bitch with whelps, or a snake lying in the road, should have been looked upon as portending bad fortune is a deplorable instance of human weakness, and of the pernicious influence of superstition on the mind. It is probable that this practice of making ordinary events ominous of good or bad fortune took its rise in Egypt, the parent country of almost every superstition of paganism; but wherever it may have arisen, it spread itself over the whole inhabited globe, and still prevails in a greater or less degree among the vulgar of all nations. That paying any regard to omens, is contrary to every principle of sound philosophy, all philosophers will readily acknowledge; and whoever has studied the writings of St Paul, must be convinced that it is inconsistent with the spirit of genuine Christianity.

* OMENED. *adj.* [from *omen*.] Containing prognosticks.—

Fame may prove,
Or *omen'd* voice, the messenger of Jove,
Propitious to the search. *Pope's Odyssey.*

(1.) * OMENTUM. *n. s.* [Lat.] The cawl, called also reticulum, from its structure resembling that of a net. When the peritonæum is cut, as usual, and the cavity of the abdomen laid open, the *omentum* or cawl presents itself first to view. This membrane, which is like a wide and empty bag, covers the greatest part of the guts. *Quincy.*

(2.) OMENTUM. See ANATOMY, *Index.*

(1.) * OMER. *n. s.* A Hebrew measure about three pints and a half English. *Bailey.*

(2.) OMER, HOMER, CORUS, or CHOMER, in the Jewish antiquities, was a measure containing 10 baths, or 75 gallons and 5 pints, as a measure of things liquid, and 32 pecks and 1 pint, as a measure for things dry. The *corus* or *omer* was most commonly a measure for things dry; and the greatest that was used among the Jews. It contained, according to the rabbins, 10 ephahs or 30 sata or seahs. CORUS is the most usual term in the historical writers, and *omer* or *chomer* among the prophets.

(3.) OMER, ST, a fortified, large, and populous town of France, in the department of the Straits of Calais and late province of Artois. It was anciently a village, called *Sithieu*, and owes its present name and importance to a saint, who built a monastery here in the 7th century. The principal church, and that of St Bertin, are magnificent, as is the late abbey of that saint. In 1677 it was taken by the French, and confirmed to them by the treaty of Nimeguen. About a league from St Omer is a great morass, in which are some floating islands, that may be directed at pleasure, like boats. They produce good pasture; and the trees that grow upon them are kept low, that the wind may not have too much power over them. St Omer is seated on the Aa, on the side of a hill, 8 miles NW. of Aire, and 135 N. of Paris. Lon. 2. 20. E. Lat. 54. 45. N.

OMERA, a town of Arabia, in Yemen.

OMESSA, a town of France, in the dep. and island of Corsica; 4 miles NE. of Corte.

OMEY, an island of Ireland, near the W. coast of Galway. Lon. 10. 7. W. Lat. 53. 31. N.

* *To* OMINATE. *v. a.* [*ominor*, Latin.] To foretoken; to shew prognosticks.—This *ominates* sadly, as to our divisions with the Romanists. *Decay of Piety.*

* OMINATION. *n. s.* [from *ominor*, Latin.] Prognostick.—The falling of salt is an authentick presagement of ill luck, yet the same was not a general prognostick of future evil among the ancients; but a particular *omination* concerning the breach of friendship. *Brown.*

* OMINOUS. *adj.* [from *omen*.] 1. Exhibiting bad tokens of futurity; foreshewing ill; inauspicious.—

Let me be duke of Clarence;
For Glo'ster's dukedom is *ominous*. *Shak. H. VI.*
Pomfret, thou bloody prison,
Fatal and *ominous* to noble peers. *Shak. Rich. III.*

—These accidents, the more rarely they happen, the more *ominous* are they esteemed. *Hayward.*—

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He laſt betakes him to this *om'nous* wood. *Milton.*

—As in the heathen worſhip of God, a ſacrifice without an heart was accounted *ominous*; ſo in the chriſtian worſhip of him, an heart without a ſacrifice is worthleſs. *South.*—

Pardon a father's tears.
And give them to Charinus' memory;
May they not prove as *ominous* to thee. *Dryd.*

2. Exhibiting tokens of good or ill.—Though he had a good *ominous* name to have made a peace, nothing followed. *Bacon's Henry VII.*—

It brave to him, and *om'nous* does appear,
To be oppos'd at firſt, and conquer here.
Cowley.

* OMINOUSLY. *adv.* [from *ominous*.] With good or bad omen.

* OMINOUSNESS. *n. ſ.* [from *ominous*.] The quality of being ominous.

(1.) OMISCH, or ALMISSA, a territory in the late Venetian Dalmatia, on the E. bank of the Cettina, 18 miles ſquare. It is mountainous, and produces vines, from which are made muſcadine and proſecco wines. It contains 20 villages.

(2.) OMISCH, or ALMISSA, an ancient town and fort in the above territory. See ALMISSA. It contains about 1200 inhabitants.

* OMISSION. *n. ſ.* [*omiſſus*, Lat.] 1. Neglect to do ſomething; forbearance of ſomething to be done.—Whilſt they were held back purely by doubts and ſcruples, and want of knowledge, without their own faults, their *omiſſion* was fit to be connived at. *Kettlewell.*—If he has made no proviſion for this change, the *omiſſion* can never be repaired. *Rogers.* 2. Neglect of duty, oppoſed to commiſſion or perpetration of crimes.—

Omiſſion to do what is neceſſary,
Seals a commiſſion to a blank of danger. *Shak.*

—The moſt natural diviſion of all offences, is into thoſe of *omiſſion* and thoſe of commiſſion. *Addiſon's Freeholder.*

* *To* OMIT. *v. a.* [*omitto*, Lat.] 1. To leave out; not to mention.—Theſe perſonal compariſons I *omit*, becauſe I would ſay nothing that may favour of a ſpirit of flattery. *Bacon.*—

Who can *omit* the Gracchi, who declare
The Scipios' worth? *Dryden.*

2. To neglect to practiſe.—Her father *omitted* nothing in her education, that might make her the moſt accompliſhed woman of her age. *Addiſon.*

* OMITTANCE. *n. ſ.* [from *omit*.] Forbearance. Not in uſe.—

I marvel why I anſwer'd not again;
But that's all one, *omittance* is no quittance.
Shak.

OMLANDS. See OMMERLANDS.

OMLI, a town of Norway, 40 miles NNE. of Chriſtianſand.

OMMAGANG, a town of Norway, 48 miles E. of Porſanger.

OMMEN, a town of Holland, in the dep. of the Yſſel, and late prov. of Overyſſel, on the Vecht; 28 miles SE. of Covorden.

OMMENBURG, a ſtrong town of Germany, in the late electorate of Mentz, ſeated on the Othern, 9 miles SE. of Marpurg, and 45 NE. of Francfort. By Bonaparte's deciſion of the indemnities, Auguſt 21, 1802, it appears to be in that part of the late electorate allotted to the princes of Naſſau.

OMMERLANDS, or OMMELAND, a ci-devant territory of Holland, in the dep. of the Ems, and late prov. of Groningen, of which it formed one half. See GRONINGEN, N° 2.

OMMIRABI, or } a river of Barbary, which
OMMIRABIB, } riſes in Mount Atlas, croſſes Tedles in Morocco, ſeparates that kingdom from that of Fez, and falls into the Azamor, where it forms the ſmall Gulf of Ommirabi.

* OMNIFARIOUS. *adj.* [*omnifarium*, Latin.] Of all varieties or kinds.—Theſe particles could never of themſelves, by *omnifarious* kinds of motion, whether fortuitous or mechanical, have fallen into this viſible ſyſtem. *Bentley.*—

But if thou *omnifarious* drinks wouldſt brew,
Beſides the orchard, ev'ry hedge and buſh
Affords aſſiſtance. *Philips.*

* OMNIFEROUS. *adj.* [*omnis* and *fero*, Latin.] All-bearing. *Dict.*

* OMNIFICK. *adj.* [*omnis* and *facio*, Lat.] All-creating.—

Silence, ye troubled waves, and thou deep,
peace!
Said then th' *omnifick* Word. *Milton.*

* OMNIFORM. *adj.* [*omnis* and *forma*, Lat.] Having every ſhape. *Dict.*

* OMNIGENOUS. *adj.* [*omnigenus*, Lat.] Conſiſting of all kinds. *Dict.*

* OMNIPARITY. *n. ſ.* [*omnis* and *par*, Latin.] General equality.—Their own working heads affect, without commandment of the word, to wit, *omniparity* of churchmen. *White.*

* OMNIPOTENCE. } *n. ſ.* [*omnipotentia*, Lat.]
* OMNIPOTENCY. } Almighty power; unlimited power.—

Whatever fortune
Can give or take, love wants not, or deſpiſes;
Or by his own *omnipotence* ſupplies. *Denham.*

—As the ſoul bears the image of the divine wiſdom, ſo this part of the body repreſents the *omnipotency* of God, whilſt it is able to perform ſuch wonderful effects. *Wilkins.*—The greateſt danger is from the greateſt power, and that is *omnipotency*. *Tillotſon.*—

Eternal wiſdom is their guide,
Their help, *omnipotence*. *Addiſon.*

Will *omnipotence* neglect to ſave
The ſuff'ring virtue of the wife and brave? *Pope.*

* OMNIPOTENT. *adj.* [*omnipotens*, Latin.] Almighty; powerful without limit; all-powerful.—You were alſo, Jupiter, a ſwan, for the love of Leda: oh *omnipotent* love! how near the god drew to the complexion of a gooſe! *Shak. Merry Wives.*—The perfect being muſt needs be *omnipotent*; both as ſelf-exiſtent and as immenſe; for he that is ſelf-exiſtent, having the power of being, hath the power of all-being, equal to the cauſe of all-being, which is to be *omnipotent*. *Grew.*

* OMNIPRESENCE. *n. ſ.* [*omnis* and *præſens*, Lat.] Ubiquity; unbounded preſence.—

He alſo went
Inviſible, yet ſtaid; ſuch privilege
Hath *omnipreſence*. *Milton's Paradiſe Loſt.*

Adam, thou know'ſt his *omnipreſence* fills
Land, ſea, and air. *Milton's Paradiſe Loſt.*

—If my ſoul can have its effectual energy upon my

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my body with eaſe, with how much more facility can a being of immenſe exiſtence and *omnipreſence*, of infinite wiſdom and power, govern a great but finite univerſe? *Hale.*

* OMNIPRESENT. *adj.* [*omnis* and *præſens*, Latin.] Ubiquitary; preſent in every place.—

Omniſcient maſter, *omnipreſent* king,
To thee, to thee, my laſt diſtreſs I bring. *Prior.*

* OMNISCIENCE. } *n. ſ.* [*omnis* and *ſcientia*,
* OMNISCIENCY. } Latin.] Boundleſs knowledge; infinite wiſdom.—In all this miſconſtruction of my actions, as I have no judge but God above me, ſo I can have comfort to appeal to his *omniſcience*. *King Charles.*—Thinking by retirement to obſcure himſelf from God, Adam infringed the *omniſciency* and eſſential ubiquity of his Maker. *Brown.*—An immenſe being does ſtrangely fill the ſoul; and omnipotency, *omniſciency*, and infinite goodneſs, enlarge the ſpirit, while it ſixtly looks upon them. *Burnet.*

Since thou boaſt'ſt th' *omniſcience* of a God,
Say in what cranny of Sebaſtian's ſoul,
Unknown to me, ſo loath'd a crime it lodg'd?
Dryden.

* OMNISCIENT. *adj.* [*omnis* and *ſcio*, Latin.] Infinitely wiſe; knowing without bounds; knowing every thing.—By no means truſt to your own judgment alone; for no man is *omniſcient*. *Bacon.*

What can 'ſcape the eye
Of God all-ſeeing, or deceive his heart
Omniſcient. *Milton's Paradiſe Loſt.*

—That which is preſent cannot but be known by him who is *omniſcient*. *South.*—It is one of the natural notions belonging to the Supreme Being, to conceive of him that he is *omniſcient*. *Wilkins.*—

Omniſcient maſter, omnipreſent king,
To thee, to thee, my laſt diſtreſs I bring. *Prior.*

* OMNISCIOUS. *adj.* [*omnis* and *ſcio*, Latin.] All-knowing. Not in uſe.—I dare not pronounce him *omniſcious*, that being an attribute individually proper to the Godhead. *Hakewill on Prov.*

OMNIUM. [Lat. *i. e.* Of all.] A term of finance, denoting all the particulars included in the contract between government and the public for a loan; ſuch as 3 or 4 per cents, lottery tickets at a ſtipulated price, annuities for certain terms, &c.

* OMNIVOROUS. *adj.* [*omnis* and *voro*, Lat.] All-devouring. *Diſt.*

OMOA, a Spaniſh town and fortification on the S. ſide of the bay of Honduras, N. Lat. 15. 50. W. Lon. 89. 50. from London. It is the key to the bay; and ſuch is the depth of the water, that ſhips of any burden may ride in the harbour with ſafety. It is a place of the utmoſt importance to Spain, as the regiſter ſhips to and from Guatimala are ſent to it in the time of war. The town was firſt eſtabliſhed in 1751, under the command of Don Joſeph Antonio De Palmo. At that period the inhabitants were about 20 white men, 60 mulattoes and free negroes, and 200 ſlaves to the king of Spain; and the military force conſiſted of about 30 ſoldiers, beſides officers. The fort was originally compoſed of ſand confined in boarded coffers, and faced with half-burnt bricks. It was defended by 12 fine braſs 24-pounders mounted, 4 or 5 iron guns of different bores, and ſome field-pieces. The Spaniards, ſenſible of the importance of the place, afterwards fortified it at an incredible expence, the ſtones of which the walls are built having been raiſed from the ſea, and brought from the diſtance of 20 leagues. Theſe walls are ſaid to be 30 feet high, and 18 feet in thickneſs. The outworks were not completely finiſhed in 1776, though 1000 men had then been employed upon them for 20 years. In the end of that year, an expedition was undertaken againſt this fortreſs, in conſequence of one formed by the Spaniards againſt the Britiſh logwood cutters in the bay of Honduras and on the Moſquito ſhore. The expedition was ſucceſsful, but our troops did not long keep poſſeſſion of the place. It is hard to ſay whether the courage and magnanimity of our troops in taking this fort, or the conduct of their evacuation of it deſerve moſt fame. The latter was effected without the loſs of a man, after they had ſpiked all the guns, and deſtroyed the ſtores and ammunition.

OMOE, an iſland of Denmark, in the Great Belt; 20 miles S. of Corſoer.

OMOLE, a mountain of Theſſaly. *Virg. Æn.*

OMOLON, a river of Ruſſia, which runs into the Kolima; 20 miles ESE. of Niznei Novimſkoi.

OMONT, a town of France, in the dep. of the Ardennes; 20 miles S. of Charleville.

OMOPHAGIA, an ancient Greek feſtival, in honour of BACCHUS OMOPHAGOS. This feſtival was obſerved in the ſame manner with the other feſtivals of Bacchus, in which they counterfeited madneſs. What was peculiar to it, was, that the worſhippers uſed to eat the entrails of goats, raw and bloody, in imitation of the god, who was ſuppoſed to do the ſame thing.

OMOPHAGOS, [Gr. *i. e.* an eater of raw fleſh.] a ſirname of Bacchus. See laſt article.

* OMOPLATE. *n. ſ.* [ὠμος and πλατυς.] The ſhoulder blade. *Diſt.*

OMOREA. See MYTHOLOGY, § 23.

OMPANORATES, prieſts of Madagaſcar, who are alſo ſchoolmaſters and teach Arabic and writing. Their books are chiefly extracts from the Koran.

OMPHACINE OIL, a viſcous brown juice extracted from green olives. With this oil the ancient ATHLETÆ, when going to wreſtle, anointed themſelves; and when that gymnaſtic exerciſe was over, they rolled themſelves in the ſand, which, mixing with the oil and ſweat on their bodies, conſtituted the STRIGILA ſo highly eſteemed in the cure of ſeveral diſeaſes. This precious medicine was carefully ſcraped off the body of the athlete with a kind of inſtrument ſomething like a comb, which was called *ſtrigilis*; and ſuch was the demand for the ſcrapings, that they were a very lucrative article of trade.

OMPHALE, in fabulous hiſtory, a queen of Lydia, daughter of Jardanus. She married Tmolus, who at his death left her miſtreſs of his kingdom. Omphale had been informed of the great exploits of Hercules, and wiſhed to ſee ſo illuſtrious a hero. Her wiſh was ſoon gratified. After the murder of Eurytus, Hercules by way of atonement was ordered to be ſold as a ſlave, that he might recover the uſe of his ſenſes. (See HERCULES, N° 1.) Mercury was commiſſioned to ſell him, and Omphale bought him, and reſtored him to liberty. The hero became enamoured of his miſtreſs,

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mistress, and the queen favoured his passion, and had two sons by him, Agelaus and Lamon; from whom were descended Gyges and Crœsus; though some make these Lydian monarchs spring from Alcæus, a son of Hercules, by one of the female servants of Omphale. (See Lydia, § 2.) Hercules is represented by the poets as so desperately enamoured of the queen, that, to conciliate her esteem, he spun by her side among her women, while she covered herself with the lion's skin, and armed herself with the club of the hero, often striking him with her sandals for the uncouth manner with which he held the distaff, &c.

OMPHALEA, in botany, a genus of the triandria order, belonging to the monœcia class of plants; and in the natural method ranking with those of which the order is doubtful. The male calyx is tetraphyllous; there is no corolla; the receptacle into which the antheræ are sunk is ovate. The female calyx and corolla are as in the male; the stigma trifid; the capsule carnous and trilocular, with one seed. There are two species.

OMPHALOCELE, umbilical hernia. See Surgery, *Index*.

OMPHALOMANTIA, a species of divination, pretended to by midwives, of foretelling how many more children a woman is to have, from the knots on the umbilical cord.

OMPHALO-MESENTERIC, in anatomy. All fœtuses are wrapped up in at least two coats or membranes; most of them have a third called *allantoides* or *urinary*. Some, as the dog, cat, hare, &c. have a fourth, which has two blood-vessels, viz. a vein and an artery, called *omphalo-mesenterics*, because passing along the string to the navel, and terminating in the mesentery.

OMPHALOPTER. See next article.

* OMPHALOPTICK. *n. f.* [ὀμφαλος and ὀπτικος.] An optic glass that is convex on both sides, commonly called a convex lens. *Dict.*

OMPHALOS, an ancient town of Crete, sacred to Jupiter.

OMPOMPANOOSUCK, a rapid river of Vermont, which rises in Tunbridge, Orange county, and running SE. falls into the Connecticut, above Dartmouth College.

OMRAH, a man of the first rank in the Mogul empire; a nobleman. It is the plural of the Arabic *ameer*.

OMRAUTTY, a town of Indostan, in Berar, 20 miles SE. of Ellichpour. Lon. 78. 16. E. Lat. 20. 55. N.

OMSK, a town and fort of Russia, in Tobolsk, at the conflux of the Om and the Irtisch, built in 1716, with a garrison; 260 miles SE. of Tobolsk.

OMTCHOU, a river of Thibet.

OMTRA, a town of Japan, in Ximo isle.

(1.) * ON. *prep.* [*aen*, Dutch; *an*, German.] 1. It is put before the word, which signifies that which is under, that by which any thing is supported, which any thing strikes by falling, which any thing covers, or where any thing is fixed.—

He is not lolling *on* a lewd love bed,
But *on* his knees at meditation. *Shak.*

What news?—
—Richmond is *on* the seas.—
—There let him sink and be the seas *on* him. *Shak.*

Distracted terror knew not what was best;
On what determination to abide. *Daniel.*

How soon hath Time, the subtile thief of youth,
Stol'n *on* his wing my three and twentieth year. *Milton.*

As some to witness truth, Heav'n's call obey,
So some *on* earth must, to confirm it, stay. *Dryden.*

They stooping low,
Perch'd *on* the double tree. *Dryden.*

On me, *on* me let all thy fury fall. *Pope.*

2. It is put before any thing that is the subject of action.—

Th' unhappy husband, husband now no more,
Did *on* his tuneful harp his loss deplore. *Dryd.*

3. Noting addition or accumulation.—

Mischiefs *on* mischiefs, greater still. *Dryden.*

4. Noting a state of progression.—

Ho Mæris! whither *on* thy way so fast?
This leads to town. *Dryden.*

5. It sometimes notes elevation.—

Chuse next a province for thy vineyard's reign,
On hills above, or in the lowly plain. *Dryden.*

The spacious firmament *on* high. *Addison.*

6. Noting approach or invasion.—

Their navy ploughs the wat'ry main,
Yet soon expect it *on* your shore again. *Dryden.*

7. Noting dependence or reliance.—*On* God's providence and *on* your bounty, all their present support and future hopes depend. *Smalridge.* 8. At, noting place.—

On each side her,
Stood pretty dimpled boys. *Shak.*

9. It denotes the motive or occasion of any thing.—The same prevalence of genius, the world cannot pardon your concealing, *on* the same consideration. *Dryden.*—The joy of a monarch for the news of a victory, must not be expressed like the ecstasy of a harlequin *on* the receipt of a letter from his mistress. *Dryden.*—The best way to be used by a father *on* any occasion. *Locke.*—We abstain on such solemn occasions from things lawful. *Smalridge.* 10. It denotes the time at which any thing happens: as, this happened *on* the first day. *On* is used, I think, only before day or hour, not before denomination of longer time.—In the second month, *on* the twenty-seventh day. *Gen.* viii. 14. 11. It is put before the object of some passion.—

Compassion *on* the king commands me stoop. *Shak.*

Their sorrow hurts themselves; *on* him 'tis lost. *Dryden.*

12. In forms of denunciation it is put before the thing threatened.—

Hence *on* thy life; the captive maid is mine. *Dryden.*

13. Noting imprecation.—

Sorrow *on* thee, and all the pack of you! *Shak.*

14. Noting invocation.—

On thee, dear wife, in deserts all alone,
He call'd. *Dryden.*

15. Noting the state of a thing fired. This sense seems peculiar, and is perhaps an old corruption of *a fire*.—

—The earth shook to see the heavens *on* fire,
And not in fear of your nativity. *Shak.*

—The horses burnt as they stood fast tied in the stables,

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ſtables, or by chance breaking looſe, ran up and down with their tails and manes *on* a light fire. *Knolles.*—His fancy glows in the progreſs, and becomes *on* fire, like a chariot wheel by its own rapidity. *Pope.* 16. Noting ſtipulation or condition. —I can be ſatisfied *on* more eaſy terms. *Dryden.* 17. Noting diſtinction or oppoſition.—The Rhodians, *on* the other ſide, mindful of their former honour, valiantly repulſed the enemy. *Knolles.* 18. Before *it*, by corruption, it ſtands for *of*.—

This tempeſt,
Daſhing the garment of this peace, aboded
The ſudden breach *on't*. *Shak.*

—A thriving gameſter has but a poor trade *on't*, who fills his pockets at the price of his reputation. *Locke.* 19. Noting the manner of an event.

Note,
How much her grace is alter'd *on* the ſudden.
Shak.

20. *On*, the ſame with *upon*. See UPON.

(2.) * ON. *adv.* 1. Forward; in ſucceſſion.—As he forbore one act, ſo he might have forborn another, and after that another, and ſo *on*, till he had by degrees weakened, and at length mortified and extinguiſhed the habit itſelf. *South.*—If the tenant fail the landlord, he muſt fail his creditor, and he his, and ſo *on*. *Locke.*—Theſe ſmaller particles are again compoſed of others much ſmaller, all which together are equal to all the pores or empty ſpaces between them; and ſo *on* perpetually till you come to ſolid particles, ſuch as have no pores. *Newton.* 2. Forward; in progreſſion.

On indeed they went; but oh! not far. *Dan.*
So ſaying, *on* he led his radiant files. *Milton.*
My haſting days fly on with full career. *Milt.*
Hopping and flying, thus they led him *on*
To the ſlow lake. *Dryden.*
What kindled in the dark the vital flame,
And ere the heart was form'd, puſh'd *on* the
red'ning ſtream. *Blackmore.*
On with your tale. *Rowe.*

3. In continuance; without ceaſing.—

Let them ſleep, let them ſleep *on*,
Till this ſtormy night be gone. *Craſhaw.*
Sing *on*, ſing *on*, for I can ne'er be cloy'd.
Dryden.
As in a fev'riſh dream you ſtill drink *on*,
And wonder why your thirſt is never gone.
Dryden.

—The peaſants defy the ſun; they work *on* in the hotteſt part of the day without intermiſſion. *Locke.* 4. Not off: as, he is neither *on* nor *off*; that is, he is irreſolute. 5. Upon the body, as part of dreſs. His clothes were neither *on* nor *off*; they were diſordered. See OFF.—A long cloak he had *on*. *Sidney.*—

Stiff in brocade, and pinch'd in ſtays,
Her patches, paint, and jewels *on*. *Prior.*
A painted veſt prince Volager had *on*,
Which from a naked Pict his grandſire won.
Blackmore.

6. It notes reſolution to advance forward; not backward.—

A thouſand ways, the nobleſt path we'll tread;
And bravely *on*, till they or we, or all,
A common ſacrifice to honour fall. *Denham.*

7. It is through almoſt all its ſignifications oppoſed to *off*, and means approach, junction, addition, or preſence.

(3.) ON. *interject.* A word of incitement or encouragement to attack; elliptically for *go on*.—Therefore *on*, or ſtrip your ſword ſtark-naked! for meddle you muſt. *Shak.*—

Cheerly *on*, couragious friends! *Shak.*
On then, my muſe! and fools and knaves expoſe. *Young.*

(4.) ON, in ancient geography, a city of Egypt, ſacred to the ſun, and by the Greeks, on that account, called *Heliopolis*. (See HELIOPOLIS, § 1.) It was remarkable for the wiſdom and learning of its prieſthood, and for the ſpacious buildings in which they cultivated the ſtudies of philoſophy and aſtronomy. The prieſts of On were eſteemed more noble than all the other prieſts of Egypt, and were always miniſters of ſtate, owing to their high antiquity and great learning. Bp. Warburton affirms that they held the ſyſtem which now diſtinguiſhes the name of Copernicus; and that Pythagoras received it from OENUPHIS, a prieſt of *On*, and brought it into Greece.

ONA, a river of Ruſſia, in Irkutſk, which runs into the Udo, at Mungalona.

ONÆUM, an ancient town and promontory of Dalmatia. *Liv.* xliii, *c.* 19.

ONANCOCK, a town of Virginia. Lon. 75. 40. W. Lat. 37. 45. N.

ONANG-SIUEN, a town of Aſia, in Corea.

ONANIA, or } terms lately framed to denote
ONANISM, } the crime of ſelf-pollution, mentioned in ſcripture to have been committed by Onan. See *Dr Tiſſot's Onania.*

ONANO, a town of Italy, in the Pope's dominions, in the Orvietan, between Aquependente and Petigliano.

ONANS, a town of France, in the dep. of the Doubs; 12 miles NW. of Blamont.

ONATIAYO, an iſland in the South Pacific Ocean. Lon. 138. 51. W. Lat. 9. 58. S.

ONCA. See FELIS, N° XXII.

(1.) * ONCE. *adv.* [from *one*.] 1. One time.—Trees that bear moſt are fruitful but *once* in two years. *Bacon.*—

A dove, ſent forth *once* and again to ſpy
Green trees and ground. *Milton.*
Once every morn he march'd, and *once* at
night. *Cowley.*

—You came out like ſome great monarch to take a town but *once* a year, as it were for your diverſion. *Dryden.*—

O virgin! daughter of eternal night,
Give me this *once* thy labour to ſuſtain
My right, and execute my juſt diſdain. *Dryd.*
In your tuneful lays,
Once more reſound the great Apollo's praiſe.
Pope.

2. A ſingle time.—Who this heir is, he does not *once* tell us. *Locke.* 3. The ſame time.—

At *once* with him they roſe:
Their riſing all at *once* was as the ſound
Of thunder heard remote. *Milton.*
Fir'd with this thought, at *once* he ſtrain'd
the breaſt,
And on the lips a burning kiſs impreſs'd. *Dryd.*

4. At a point of time indiviſible.—

Night

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Night came on, not by degrees prepared,
But all at *once*; at *once* the winds arise,
The thunders roll. *Dryden.*

—Now that the fixed stars, by reason of their immense distance, appear like points, unless so far as their light is dilated by refraction, may appear from hence, that when the moon passes over them and eclipses them, their light vanishes, not gradually like that of the planets, but all at *once*. *Newton.* 5. One time, though no more.—

Fuscinus, those ill deeds that fully fame,
In blood *once* tainted, like a current run
From the lewd father to the lewder son. *Dryd.*

6. At the time immediate.—This hath all its force at *once*, upon the first impression. *Atterbury.* 7. Formerly; at a former time.—

Thereon his arms and *once* lov'd portrait lay,
Thither our fatal marriage-bed convey. *Denh.*
My soul had *once* some foolish fondness for thee,
But hence 'tis gone. *Addison.*

8. *Once* seems to be rather a noun than an adverb, when it has *at* before it, and when it is joined with an adjective: as, *this once, that once.*

(2.) ONCE, in zoology. See FELIS, N° XXVII.

ONCHESTUS, an ancient town of Bœotia.

(1.) * ONE. *adj.* [*an, ene,* Saxon; *een,* Dutch; *ein,* German; ἓν, Gr.] 1. Less than two; single; denoted by an unit.—

The man he knew was one that willingly,
For *one* good look would hazard all. *Daniel.*

—Pindarus the poet, and one of the wisest, acknowledged also *one* God the most high, to be the father and creator of all things. *Raleigh.*—

Love him by parts in all your num'rous race,
And from those parts form *one* collected grace;
Then when you have refin'd to that degree,
Imagine all is *one*, and think that *one* is he.
Dryden.

2. Indefinitely; any; some one.—

We shall
Present our service to a fine new prince,
One of these days. *Shak.*
I took pains to make thee speak; taught thee each hour
One thing or other. *Shak. Tempest.*

3. It is added to any.—When *any one* heareth the word of the kingdom, and understandeth it not, then cometh the wicked one and catcheth away that which was sown in the heart. *Matt.* xiii. 19.—If *any one* prince made a felicity in this life, and left fair fame after death, without the love of his subjects, there were some colour to despise it. *Suckling.* 4. Different; diverse: opposed to *another.*—What a precious comfort to have so many, like brothers, commanding *one another's* fortunes. *Shak.*—It is *one* thing to draw outlines true, the features like, the proportions exact, the colouring tolerable, and *another* thing to make all these graceful. *Dryden.*—Suppose the common depth of the sea, taking *one* place with *another*, to be about a quarter of a mile. *Burnet.*—It is *one* thing to think right, and *another* thing to know the right way to lay our thoughts before others. *Locke.*—My legs were closed together by so many wrappers *one* over *another*, that I looked like an Egyptian mummy. *Addison.*—There can be no reason why we should prefer any *one* action to *another*, but because we have greater hopes of advantage from the *one* than from the other. *Smalridge.*—Two bones rubbed hard against *one another*, or with a file, produce a fetid smell. *Arbuthnot on Aliments.*—At *one* time they keep their patients so warm, as almost to stifle them, and all of a sudden the cold regimen is in vogue. *Baker on Learning.* 5. One of two opposed to *the other.*—Ask from the *one* side of heaven unto *the other*, whether there hath been any such thing as this. *Deut.* iv. 32.—Both the matter of the stone and marchasite, had been at once fluid bodies, till *one* of them, probably the marchasite, first growing hard, *the other*, as being yet of a more yielding consistence, accommodated itself to the harder's figure. *Boyle.* 6. Not many; the same.—The church is therefore *one*, though the members may be many; because they all agree in *one* faith. There is *one* Lord and *one* faith, and that truth once delivered to the saints, which whosoever shall receive, embrace and profess, must necessarily be accounted *one* in reference to that profession: for if a company of believers become a church by believing, they must also become *one* church by believing *one* truth. *Pearson.* 7. Particulary one.—

One day when Phœbe fair,
With all her band, was following the chase,
This nymph, quite tir'd with heat of scorching air,
Sat down to rest. *Spenser.*
One day, in turning some uncultur'd ground,
In hopes a free-stone quarry might be found,
His mattock met resistance, and behold,
A casket burst, with diamonds fill'd, and gold.
Harte.

8. Some future.—

Heaven waxeth old, and all the spheres above
Shall *one* day faint,
But the soul survives and lives for aye. *Davies.*

(2.) * ONE. *n. s.* [There are many uses of the word *one*, which serve to denominate it a substantive, though some of them may seem rather to make it a pronoun relative, and some may perhaps be considered as consistent with the nature of an adjective, the substantive being understood.] 1. A single person.—

If *one* by *one* you wedded all the world,
Or you kill'd would be unparallel'd. *Shak.*

—Although the beauties, riches, honours, sciences, virtues, and perfections of all men were in the present possession of *one*, yet somewhat beyond and above all this would still be sought. *Hooker.*—

From his lofty steed he flew,
And raising *one* by *one* the suppliant crew,
To comfort each. *Dryden's Knight's Tale.*
If *one* must be rejected, *one* succeed,
Make him my Lord, within whose faithful breast
Is fix'd my image, and who loves me best. *Dryd.*
When join'd in *one*, the good, the fair, the great,
Descends to view the muses humble seat. *Grainv.*

2. A single mass or aggregate.—

It is *one* thing only as a heap is *one.*
Blackmore.

3. The first hour.—

'Till 'tis *one* o'clock, our dance of custom
Let us not forget. *Shak. Merry Wives of Wind.*

4. The same thing.

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I answer'd not again:
But that's all *one*. *Shak.*
—To be in the understanding, and not be understood, is all *one* as to say any thing is and is not in the understanding. *Locke.* 5. A person, indefinitely and loose.—A good acquaintance with method will greatly assist every *one* in ranging human affairs. *Watts' Logic.* 6. A person, by way of eminence.—

My father king of Spain was reckon'd *one*,
The wisest prince that there had reign'd. *Shak.*

7. A distinct or particular person.—Birds will learn *one* of another. *Bacon's Nat. Hist.*—No nations are wholly aliens and strangers the *one* to the other. *Bacon's Holy War.*—The obedience of the *one* to the call of grace, when the other, supposed to have sufficient, if not an equal measure, obeys not, may reasonably be imputed to the humble, malleable, melting temper. *Hammond.*—*One* or other sees a little box which was carried away with her, and so discovers her to her friends. *Dryden.* 8. Persons united.—

As I have made ye *one*, lords, *one* remain.
Shak.

9. Concord; agreement; one mind.—The king was well instructed how to carry himself between Ferdinando and Philip, resolving to keep them at *one* within themselves. *Bacon's Henry* VII.—He is not at *one* with himself what account to give of it. *Tillotson.* 10. [*On l'on*, French. It is used sometimes as a general or indefinite nominative for any man, any person. For *one* the English formerly used *men*; as, *they live obscurely*, men *know not how*; *or die obscurely*, men *mark not when*. *Ascham.* For which it would now be said, *one knows not how*, *one knows not when*; or, *it is not known how*.] Any person; any man indefinitely.—It is not so worthy to be brought to heroical effects by fortune or necessity, like Ulysses and Æneas, as by *one's* own choice. *Sidney.*—*One* may be little the wiser for reading this dialogue. *Sidney.*—*One* would imagine these to be the expressions of a man blessed with ease, affluence, and power. *Atterbury.*—For provoking of urine, *one* should begin with the gentlest first. *Arbuth. on Alim.*—For some time *one* was not thought to understand Aristotle, unless he had read him with Averroes's comment. *Baker.* 11. A person of particular character.—

Then must you speak
Of *one* that lov'd not wisely, but too well;
Of *one* not easily jealous. *Shak. Othello.*

With lives and fortunes trusting *one*
Who so discreetly us'd his own. *Waller.*

—Edward I. was *one* who very well knew how to use victory, as well as obtain it. *Hale.*—

One who contemned divine and human laws.
Dryden.

Forgive me, if that title I afford
To *one* whom nature meant to be a lord. *Harte.*

12. *One* has sometimes a plural, either when it stands for persons indefinitely; as, *the* great ones *of the world*; or when it relates to something going before, and is only the representative of the antecedent noun. This relative mode of speech, whether singular or plural, is in my ear not very elegant, yet is used by good authors.—Hence with your little *ones*. *Shak.*—These successes are more glorious which bring benefit to the world, than such ruinous *ones* as are dyed in human blood. *Glanville.*—He that will overlook the true reason of a thing which is but one, may easily find many false *ones*, error being infinite. *Tillotson.*—The following plain rules and directions, are not the less useful because they are plain *ones*. *Atterbury.*—There are many whose waking thoughts are wholly employed on their sleeping *ones*. *Spectator.* 13. *One another* is a mode of speech very frequent; as *they love* one another; that is, *one of them loves another*; † *the storm beats the trees against* one another; that is, *one against another*.—In democratical governments, war did commonly unite the minds of men; when they had enemies abroad they did not contend with *one another* at home. *Davenant.*

(3.) ONE, in geography, a cape of Africa, in Barbary, near the mouth of the Mulvia, in Talensin.

(1.) * ONE BERRY. *n. s.* [*aconitum*, Lat.] Wolf's bane, or monk's bane.

(2.) ONE BERRY. See ACONITUM, and PARIS, N° V.

ONE BLADE, a species of CONVALLARIA.

ONEBY, a town of Lincoln, W. of Stamford.

ONEEHOURA, and ONEEHOW, } two small islands of that cluster which was discovered by Captain Cook, and by him called the *Sandwich Islands*. (See SANDWICH ISLANDS.) *Oneehourà* is very small, and its chief produce is yams. *Oneehow* is confiderably larger, being about ten miles over. It is remarkable for the great quantity of excellent yams which it produces, and for a sweet root called *tee* or *tea*, which is generally about the thickness of a man's wrist, though sometimes much larger. This root which the natives commonly bake previous to their bringing it to market, is of a wet clammy nature, and with proper management makes excellent beer.

* ONEEYED. *adj.* [*one* and *eye*.] Having only one eye.

A sign-post dauber would disdain to paint
The *oneey'd* heroe on his elephant. *Dryden.*
The mighty family
Of *oneey'd* brothers hasten to the shore. *Addison.*

(1.) ONEG, or ONEGA, } a town of Russia, in Archangel, on the Onega, near the White sea; 80 miles SSW. of Archangel. Lon. 55. 10. E. Ferro. Lat. 63. 35. N.

(2, 3.) ONEGA, a river and lake of Russia, between Muscovite Carelia, the territory of Cargapol, and Swedish Carelia. The river is 100 miles long and 40 broad, and communicates with the lake Ladoga, and consequently with Petersburgh. It rises in Cargapol, and gives name to

(4.) ONEGA, a territory of Russia, in Archangel, abounding with woods.

(1.) ONEGLIA, ONEGLIA, or ONEILE, a late principality of Italy, formerly belonging to the king of Sardinia, although insulated and surrounded on all sides except towards the sea, by the territories of the Genoese; but in May 1801, it was annexed to the Ligurian republic, now forms a part of the kingdom of Italy, or, which is the same thing, of the French empire. It consists of three valleys, viz. ONEGLIA, (N° 2.) MARO, and PRELA, all of which are 15 miles from the sea, and contain

† *This expression rather means*, each of them loves the other.

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tain 53 towns and villages, 3000 families, 14,000 ſouls, and 2000 men fit to bear arms. It abounds with fruits, vines, and olive trees, from which excellent wines and olive oil are made.

(2.) ONEGLIA, a valley and diſtrict in the above province, which abounds ſo much in fruit trees, that it appears like one continued orchard.

(3.) ONEGLIA, a ſea-port of Italy, formerly belonging to the king of Sardinia, capital of the above principality and diſtrict. It has often been taken and retaken in the wars of Italy, as it is an open place. The French and Spaniards had poſſeſſion of it in 1744, but were driven out by the Piedmonteſe; however, they returned next winter, and again made themſelves maſters of it. It was plundered and burnt by the French, on the 23d October 1792; the inhabitants having fired upon a flag of truce, ſent by the French admiral under Capt. Duchayla, whereby he and ſeveral others were wounded, and ſix Frenchmen killed. It was again taken by the French in April 1794; but being retaken by the Auſtrians, was a third time taken by the French, in March 1799. Lon. 7. 51. E. Lat. 43. 58. N.

(1.) ONEIDA, a lake of New York, about 25 miles long and 5 broad; ſituated between Onondago, Oneida, and Herkemer counties. It receives the ONEIDA (N° 2.) from the N., Wood-Creek from the E. and ſeveral other ſmaller rivers; and communicates with Lake Ontario on the W. by the Oſwego. The middle part of it lies in about Lon. 76° W. Lat. 43. 5. N.

(2.) ONEIDA, a river of New York, which runs into the above lake from the N.

(3.) ONEIDA, a county of New York, chiefly ſeated on the banks of the above lake, bounded N. by Herkemer, E. by Montgomery, SE. by Otſego, S. by Tyoga, and W. by Onondago counties. It is 50 miles long from E. to W. and 30 broad from N. to S. It is well watered by various rivers, and pleaſantly variegated with hills; and the ſoil is generally fertile.

(4.) ONEIDA CASTLE, a fort of New York, on the Geneſſee, 25 miles S. of Lake Ontario.

ONEIDAS, or ONEIDA INDIANS, one of the SIX NATIONS of N. American Indians, who inhabit the country S. of Lake Oneida, in the above county (N° 3). The number of their warriors, in 1795, was 250, and their total population 628. Their name is ſaid to be derived from their ancient Pagan deity, which a few of them ſtill worſhip, called *Oneida*, which in their language ſignifies *the Upright Stone*: and in fact this idol is nothing more than a rude, miſhapen, cylindrical ſtone, of about 120 lb. weight, which formerly they uſed to place in the notch of a tree, and then they thought themſelves invincible. Theſe ſuperſtitions, however, are nearly extirpated, by the exertions of the Rev. Meſſrs Kirkland and Sarjeant, who were ſent, many years ago, as miſſionaries, by the ſociety in Scotland for promoting Chriſtian knowledge, and have not been unſucceſsful. The Oneidas receive an annuity, for lands purchaſed of them in 1795, of 628 dollars from the United States, and of 3552 dollars from the State of New York. *Kahnonwelohale* is their capital.

ONEION, an ancient town of Arcadia.

ONEIREGMOS, nocturnal pollution.

ONEIROCRITICA, the art of interpreting dreams, or foretelling future events by means of dreams. See DREAM, § 2—7. The word is formed from the Greek ὄνειρος, *dream*, and κρίσις, of κρίνω, *judgment*. Some call it ONEIROCRATICA; and derive it from ὄνειρος and κρατέω, *I poſſeſs, I command*. It appears from various paſſages of Scripture, that there was, under the Jewiſh diſpenſation, ſuch a thing as foretelling future events by dreams; but then there were particular gifts or revelations required for that purpoſe. See Gen. xxviii. 12. xxxvii. xl. xli. Dan. ii. iv. vii—xii. Matth. i. 20. Acts x. &c. But as a *human art*, it is doubtleſs as vain and chimerical as ASTROLOGY or MAGIC.

* ONEIROCRITICAL. *adj.* [ὀνειροκριτικός, Gr. *oneirocritique*, Fr. it ſhould therefore, according to analogy, be written *onirocritical* and *onirocritick*.] Interpretative of dreams.—If a man has no mind to paſs by abruptly from his imagined to his real circumſtances, he may employ himſelf in that new kind of obſervation which my *oneirocritical* correſpondent has directed him to make. *Addiſ. Spect.*

ONEIROCRITICISM, *n. ſ.* the art of interpreting dreams. See ONEIROCRITICA.

(1.) * ONEIROCRITICK. *n. ſ.* [ὀνειροκριτικός, Gr.] An interpreter of dreams.—Having ſurveyed all ranks and profeſſions, I do not find in any quarter of the town an *oneirocritick*, or an interpreter of dreams. *Addiſon's Spectator.*

(2.) ONEIROCRITICS ſignify alſo books written on dreams. There is no regard to be had to thoſe Greek books called *oneirocritics*. It is indeed ſurpriſing that the patriarch of Conſtantinople, and others, ſhould have written on ſuch a ſubject. Rigault has given a collection of the Greek and Latin works of this kind; one attributed to Aſtrampſichus; another to Nicephorus, patriarch of Conſtantinople; with the treatiſes of Artemidorus and Achmet.—But the books themſelves are mere reveries; a kind of *waking* dreams, to explain and account for *ſleeping* ones. The ſecret of ONEIROCRITICISM, according to them all, conſiſts in the relation ſuppoſed to be between the dream and the thing ſignified; but they are far from keeping to the relations of agreement and ſimilitude, and frequently have recourſe to others of diſſimilitude and contrariety. On this ſubject, the unlearned reader will find much information in Warburton's *Divine Legation of Moſes*, and the books to which he refers.

ONEIRODYNIA, uneaſineſs during ſleep. See INCUBUS, MEDICINE, *Index*, NOCTAMBULO, and SLEEP-WALKER.

ONEIROGMOS, a venereal dream.

ONEIROSCOPIST, *n. ſ.* [from ὄνειρος, Gr. a dream, and σκοπέω, to view.] One who inquires into the meaning of dreams.

ONEKOTAN, one of the KURILE ISLES. It is about 60 miles in circumference. Lon. 173° E. Ferro. Lat. 50° N.

ONEMACK, a cape of N. America, the SW. point of that continent on the NW. coaſt, and the S. limit of Briſtol Bay. Lon. 163. 30. W. Lat. 54. 30. N.

ONEMENSKAIA, a lake of Ruſſia, in the ANADIR, which communicates with the Gulf of Anadir, 208 miles below ANADIRSKOI.

* ONENESS.

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* ONENESS. *n. f.* [from *one.*] Unity; the quality of being one.—Our God is one, or rather very *oneneſs* and mere unity, having nothing but itſelf in itſelf, and not conſiſting, as all things do beſides God, of many things. *Hooker.*—The *oneneſs* of our Lord Jeſus Chriſt, referring to the ſeveral hypoſtaſes, is the one eternal indiviſible divine nature. *Hammond.*

* ONERARY. *adj.* [*onerarius*, Lat. *oneraiſe*, Fr.] Fitted for carriage or burthens; compriſing a burthen.

* *To* ONERATE. *v. a.* [*onero*, Lat.] To load; to burthen.

* ONERATION. *n. f.* [from *onerate.*] The act of loading. *Dict.*

* ONEROUS. *adj.* [*onereux*, Fr. *oneroſus*, Lat.] Burtheuſome; oppreſſive.—A baniſhed perſon, abſent out of neceſſity, retains all things *onerous* to himſelf, as a puniſhment for his crime. *Ayliffe.*

ONESIÆ THERMÆ, were, according to Strabo, *excellent baths*, and *ſalutary waters*, at the foot of the Pyrenees in Aquitania. Near the river Adour, the ancient *Aturus*, ſtands Bagnères, famous for its waters, which appear to be the *Oneſiæ* of Strabo. See BAGNERES.

ONESICRITUS, a cynic philoſopher and hiſtorian of Ægina, who accompanied Alexander the Great into Aſia, and was ſent by him to the Indian Gymnoſophiſts. He wrote a hiſtory of Alexander's expedition, which has been cenſured for the romantic and exaggerated anecdotes it contains. *Plut. in Alex. Q. Curt.* ix. 10.

(1.) ONESIMUS, a Macedonian nobleman and hiſtorian, who flouriſhed at Rome in the 3d century, and was patroniſed by the reigning emperors. He wrote the lives of the emperors Probus and Carus with great elegance and accuracy.

(2.) ONESIMUS, a ſlave of Philemon, and an early convert of St Paul's. See PHILEMON, N° 2.

ONESIPHORUS, another primitive Chriſtian, who was kind to St Paul, when a priſoner at Rome. 2 *Tim.* i. 16—18.

ONEVY, one of the FRIENDLY ISLANDS.

ONEY, a river of England, in Herefordſhire, which runs into the Lug at Leominſter.

ONEZSKOE, a lake of Ruſſia, in Olonetzkoi, 120 miles long, and 40 broad.

(1.) ONGAR, HIGH, } two ſmall towns of
(2.) ONGAR PARK, } Eſſex, NE. of Chipping Ongar.

ONG-KIN, a town of Corea, 58 miles SW. of Hoang.

ONGLEE, in heraldry, an appellation given to the talons or claws of beaſts or birds, when borne of a different colour from that of the body of the animal.

ONGOLE, a town and diſtrict of Indoſtan, in the N. part of the Carnatic; 65 miles N. of Nellore, 90 NNE. of Cuddapa, and 829 SW. of Calcutta, ſeated on the bay of Bengal. Lon. 80. 5. E. Lat. 15. 30. N.

ONGO-MANCAN, a town of Chineſe Tartary.

ONGS, a town of New Jerſey, 13 miles ESE. of Burlington.

ONIÆ OPPIDUM, and } a town and temple,
ONIÆ TEMPLUM, } ſo called from Onias, the high-prieſt of the Jews in Egypt; who built a temple in imitation of that at Jeruſalem, by permiſſion of the king of Egypt, on the ſpot where ſtood the temple of Diana Agreſtis in Leontopolis: it was encompaſſed with a brick wall, and had a large tower like that at Jeruſalem. (*Joſephus.*) It was the metropolis of the Nomos Heliopolitis (*Ptolemy*), becauſe in Strabo's time Heliopolis was fallen to decay.

ONIMAMOU, a port on the SE. coaſt of Ulietea, one of the Society Iſlands.

(1.) * ONION. *n. f.* [*oignon*, Fr. *cæpe.*] A plant.

If the boy have not a woman's gift
To rain a ſhower of commanded tears,
An *onion* will do well. *Shak. Taming the Shrew.*

I an aſs, am *onion*-ey'd. *Shak. Ant. and Cleop.*

This is ev'ry cook's opinion,
No ſav'ry diſh without an *onion*:
But leſt your kiſſing ſhould be ſpoil'd,
Your *onions* muſt be th'roughly boil'd. *Swift.*

(2.) ONION. See ALLIUM, N° 2. Onions, leeks, and garlic, are all of the ſame genus; and in their recent ſtate are acrid, but harmleſs to the human body. When, by age or climate, this acrimony is too great, they are not uſed as food. In Spain, the garlic, being equally mild with the onion, is uſed as common food. By the ordinary culinary preparation their acrimony is diſſipated, and a remarkably mild ſubſtance remains, affording much nutriment. They are uſed in medicine, uniting the two qualities of pectorals, viz. by their acrimony, being in their recent ſtate expectorant; in their boiled ſtate, on account of their mucilage, demulcent, provided the quantity taken be ſufficient. Some have found in leeks a ſomniferous quality; and onions are undoubtedly poſſeſſed of this property, as any perſon may be ſatisfied, by eating one or two, when wakeful in the night. Beſides the three ſpecies above mentioned, there are ſeveral others belonging to the ſame tribe, which we uſe as condiment; but only the leek and onion as diet. In its recent ſtate, the onion is the moſt acrid; in its boiled ſtate, the leek retains its acrimony moſt tenaciouſly. On account of this, and ſome difference of texture, the onion is more eaſily digeſted and more univerſally uſed than the leek; being more eaſily broken down, and more generally agreeable.

(3.) ONION, in geography, a river of Vermont, formerly called *French River*, and by the Indians *Winauſki*. It riſes in Calot, 14 miles W. of the Connecticut, and is navigable by ſmall veſſels 5 miles above its mouth; where it falls into Lake Champlain, between Burlington and Colcheſter. It has ſeveral beautiful caſcades.

(4.) ONION, CAPE, a cape on the SW. ſide of Newfoundland, 12 miles W. of Quirpon iſland.

(5.) ONION, SEA. See SCILLA.

ONJON, a town of France, in the dep. of Aube, and diſtrict of Troyes; 10 m. NE. of Troyes.

ONISCUS, in zoology, a genus of inſects belonging to the order of aptera. It has 14 legs, briſtly feelers, and an oval body. See *Pl.* CCXLVI. There are 15 ſpecies, and 2 new ſpecies were diſcovered by La Martiniere, the naturaliſt who accompanied Peroufe in his laſt voyage. The moſt remarkable are theſe:

1. ONISCUS AQUATICUS is of an aſhen colour,

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and tolerably ſmooth. Its body is compoſed of ſeven articulations, excluſive of the head and tail; which laſt part is much larger than the other ſegments, round at the extremity, from which iſſue two appendices, each divided into two threads. This inſect has that in common with ſea oniſci, but differs from them by the ſea ones having ten ſegments. This has ſeven legs on each ſide; the laſt of which gradually increaſe in length, and are conſtantly larger than the foremoſt. The antennæ have but three long articulations, the laſt of which is much longer than the reſt. This inſect is found in pools, ſmall rivulets, and eſpecially in ſprings.

2. ONISCUS ARMADILLO is broad, very gloſſy, and ſmooth; its colour is black, with a ſmall portion of white on the edge of the ſegment, which colour often varies; but ſtill the inſect is gloſſy and ſmooth. Its body is compoſed of ten ſegments, beſides the head and tail. Of the ten ſegments, the firſt ſeven are broad, and the laſt three ſhort. The firſt of theſe three appears divided in the middle, which is broader than the reſt, into three more. Theſe laſt ſhort ſegments, with that of the tail, form the extremity of the body, which is round, without any appendix, and conſtitutes the ſpecific character of this inſect. It has 14 feet, 7 on each ſide. When touched, it rolls itſelf up into a ball, bringing its head and tail together like the ARMADILLO, and neither antennæ nor feet are ſeen: it might be taken for a round ſhining pearl. It is found in woods.

3. ONISCUS ASELLUS, MILLEPES, or WOOD-LOUSE, is oval; the tail obtuſe, with two undivided briſtles; various as to colour; length, five lines. Their uſe in medicine is well known. See MILLEPES.

4. ONISCUS ENTOMON, the *ſea wood-louſe*, is white; eyes black; convex above, beneath flat, margin acute; antennæ four; four hind pair of legs largeſt, hairy. Body of ten ſegments. Length 1½ line. Found on the coaſt. It accompanies the herring, and is an enemy well known to our fiſhermen: theſe inſects will frequently eat up a whole fiſh while it hangs in the net.

ONIUM, a town of Peloponneſus.

ONKELOS, ſurnamed the *Proſelyte*, a famous rabbi of the firſt century, and the author of the Chaldee Targum on the Pentateuch. He flouriſhed in the time of Jeſus Chriſt, according to the Jewiſh writers. The Talmudiſts tell us that he aſſiſted at the funeral of Gamaliel, and was at a prodigious expence to make it magnificent.

ONKOTOMY, *n. ſ.* [from ογκος, Gr. a tumour, and τομη, cutting,] in ſurgery, the opening of a tumour or abſceſs. See SURGERY.

(1.) * ONLY. *adj.* [from *one*, *onely*, or *onelike*.] 1. Single; one and no more.—

Of all whom fortune to my ſword did bring,
This *only* man was worth the conquering. *Dryd.*

2. This and no other.—

The *only* child of ſhadeful Savernake. *Drayt.*

—The logick now in uſe has long poſſeſſed the chair, as the *only* art taught in the ſchools for the direction of the mind. *Locke.* 3. This above all other: as, he is the *only* man for muſick.

(2.) * ONLY. *adv.* 1. Simply; ſingly; merely; barely.—I propoſe my thoughts *only* as conjectures. *Burnet.*—The poſterity of the wicked inherit the fruit of their fathers vices; and that not *only* by a juſt judgment, but from the natural courſe of things. *Tillotſon.*—

All who deſerve his love, he makes his own;
And to be lov'd himſelf, needs *only* to be known.
Dryden.

—The practice of virtue is attended not *only* with preſent quiet and ſatisfaction, but with comfortable hope of a future recompence. *Nelſon.*—Nor muſt this contrition be exerciſed by us, *only* for groſſer evils; but when we live the beſt. *Wake.* 2. So and no otherwiſe.—Every imagination of the thoughts of his heart was *only* evil continually. *Gen.* vi. 5, 3. Singly without more: as, *only begotten.*

ONNA, a town of Aſia, in Thibet.

ONNEY, a river of England, in Salop, which runs into the Temd, 2 miles NW. of Ludlow.

ONOBA, an ancient town of Spain, near the pillars of Hercules, or Gibraltar.

ONOBALA, a river of Sicily.

ONOCHONUS, a river of Theſſaly, which runs into the Peneus. Herodotus ſays, it was dried up by Xerxes's army, vii. c. 196.

(1.) ONOMACRITUS, an Athenian ſoothſayer, who flouriſhed under Piſiſtratus and his ſons, about A. A. C. 516. He is generally believed to have been the author of the Greek poem on the *Expedition of the Argonauts*, which bears the name of *Orpheus*; as well as of the elegant poems ſtill extant under the name of MUSÆUS. He was exiled by Hipparchus. *Herod.* vii. 6.

(2.) ONOMACRITUS, another ancient author, a native of Locris, who wrote upon laws. *Ariſtot.* 2 *Polit.*

(1.) * ONOMANCY. *n. ſ.* [ονομα and μαντια.] Divination by name. Deſtinies were ſuperſtitiouſly, by *onomancy*, deciphered out of names.

(2.) ONOMANCY, } or ONOMANCIA, a branch
ONOMANTIA, } of divination, which foretels the good or bad fortune of a man, from the letters in his name. See DIVINATION and NAME. From the ſame principle the young Romans toaſted their miſtreſſes as often as there were letters in their names: hence Martial ſays, *Nævia ſex cyathis, ſeptem Juſtina bibatur.*

* ONOMANTICAL. *adj.* [ονομα and μαντις.] Predicting by names.—Theodatus, when curious to know the ſucceſs of his wars againſt the Romans, an *onomantical* or name-wizard Jew, willed him to ſhut up a number of ſwine, and give ſome of them Roman names, others Gothiſh names, with ſeveral marks, and there to leave them. *Camden.*

ONOMATOPOEIA, in grammar and rhetoric, a figure where words are formed to reſemble the ſound made by the things ſignified; as the buzz of bees, the cackling of hens, &c. See ALLITERATION; LANGUAGE, *Sect.* VII.; ORATORY, &c.

ONOMOMANCY. See ONOMANCY.

(1.) ONONDAGO, a lake of New York, called alſo SALT LAKE, about 5 miles long, and one broad. The waters of its ſalt ſprings afford immenſe quantities of ſalt, which is ſent through the country by water carriage on the lakes and rivers which communicate with this lake. Its chief outlet runs into the Seneca.

(2.) ONONDAGO, a river of New York, which riſes

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riſes from Lake Oneida, and runs W. into Lake Ontario at Oſwego. It is navigable in boats from its mouth to the head of that lake for 74 miles except at one cataract, which occaſions a land carriage of 20 yards. Salmon abound in this river.

(3.) ONONDAGO, an extenſive and fertile county of New York, 78 miles long from N. to S. and 59 broad from E. to W. It is bounded on the N. by lakes Ontario and Oneida, and by part of the Oſwego; E. by Oneida county; SE. and S. by Tyoga county, and W. by that of Ontario. It is interſected by the Seneca and Oſwego, and by 5 lakes. It comprehends 1,760,000 acres, which were granted by the legiſlature of New York to the officers and ſoldiers of the New York Line as a reward of their patriotiſm during the American war. It is divided into 27 townſhips; of which 11 are mentioned under MILITARY TOWNSHIPS: the other 16 are named, *Hannibal, Cato, Cicero, Galen, Brutus, Camillus, Junius, Cincinnatus, Sempronius, Tully, Fabius, Locke, Solon, Dryden, Virgil*, and *Hector*.

(4.) ONONDAGO, a town of New York, in Herkemer county, formerly the capital of the SIX NATIONS, in a fertile country; 30 miles SW. of Whiteſtown.

(5.) ONONDAGO Caſtle, a fort of New York, in Ononda go county, 25 m. SW. of Oneida Caſtle, and 155 NNW. of New York.

ONONDAGOES, a nation of N. American Indians, who inhabit the banks of Lake Onondago. In 1775 they had 260 warriors. In 1779, while a party of them were ravaging the American frontiers, Gen. Clinton ſent a regiment from Albany, who ſurpriſed their capital, took 33 priſoners, and killed 14, without loſing a man.

ONONGHOUHAGO, a town of New York, on the Suſquehannah, 13 miles E. of Chenongo.

ONONIS, in botany, a genus of the decandria order, belonging to the diadelphia claſs of plants; and in the natural method ranking under the 32d order, *papilionaceæ*. The calyx is quinquepartite, with the ſegments linear; the vexillum ſtriated; the legumen turgid and ſeſſile; the filaments coalited without a fiſſure. The principal ſpecies is

ONONIS ARVENSIS. *Reſt-harrow*, or *Cammock*. See REST-HARROW.

ONOPORDUM, WOOLLY THISTLE, in botany, a genus of the polygamia æqualis order, belonging to the ſyngeneſia claſs of plants; and in the natural method ranking under the 49th order *Compoſitæ*. The receptacle is honey-combed; the ſcales of the calyx mucronated or pointed.

(1.) ONORE, a diſtrict of Indoſtan, in Myſore.

(2.) ONORE, a ſea port town of Indoſtan, on the coaſt of Malabar, in Canara; 46 miles NW. of Bedamore, 70 SSE. of Goa, and 398 S. by E. of Bombay. Lon. 74. 12. E. Lat. 14. 13. N.

ONOSANDER, a Greek author and Platonic philoſopher, who wrote Commentaries on Plato's politics, which are loſt; but particularly famous for a treatiſe entitled Δηκος Στρατηγικος, "Of the duty and virtues of the general of an army;" which has been tranſlated into Italian, Spaniſh, and French. The time when he lived is not preciſely known: but is imagined to have been in the reign of Claudius I.

ONOSMA, in botany, a genus of the monogynia order, belonging to the pentandria claſs of plants; and in the natural method ranking under the 41ſt order, *Aſperifoliæ*. The corolla is campanulated, with the throat pervious: there are four ſeeds.

ONOTH, a town of Hungary, 50 miles NE. of Buda. Lon. 19. 22. E. Lat. 48. 12. N.

ONOVA, a town of Hungary, 4 miles N. of Panſowa.

ONRUST, an iſland in the E. Indian Ocean, on the coaſt of Java, in the harbour of Batavia, where the Dutch build and repair their ſhips.

(1.) ONS, an iſland in the Atlantic, near Spain. Lon. 7. 52. E. of Teneriffe. Lat. 42. 23. N.

(2.) ONS EN BRAYE, a town of France, in the dep. of the Oiſe; 7 miles of Beauvais.

ONSALD, a town of Sweden, in Halland.

* ONSET. *n. ſ.* [*on* and *ſet*.] 1. Attack; ſtorm; aſſault; firſt brunt.—As well the ſoldier dieth which ſtandeth ſtill, as he that gives the braveſt *onſet*. *Sidney*.—

All breathleſs, weary, faint,
Him ſpying, with freſh *onſet* he aſſail'd. *Spenſ.*

The ſhout
Of battle now began, and ſound
Of *onſet*. *Milton's Paradiſe Loſt.*

—Sometimes it gains a point; and preſently it finds itſelf baffled and beaten off; yet ſtill it renews the *onſet*. *South*.—Without men and proviſions it is impoſſible to ſecure conqueſts that are made in the firſt *onſets* of an invaſion. *Addiſon*.—

Obſerve
The firſt impetuous *onſets* of his grief. *Philips.*

2. Something added or *ſet on* by way of ornamental appendage.—This ſenſe, ſays *Nicholſon*, is ſtill retained in Northumberland, where *onſet* means a *taſt*.—

And for an *onſet*, Titus, to advance
Thy name and honourable family,
Lavinia will I make my empreſs. *Shak.*

* *To* ONSET. *v. a.* [from the noun.] To ſet upon; to begin. Not uſed.—This for a while was hotly *onſetted*, and a reaſonable price offered, but ſoon cooled again.

* ONSLAUGHT. *n. ſ.* [*on* and *ſlay*.] See SLAUGHTER.] Attack; ſtorm; onſet. Not in uſe.

Then call'd a council, which was beſt
By ſiege or *onſlaught* to inveſt
The enemy; and 'twas agreed
By ſtorm and *onſlaught* to proceed. *Hudibras.*

(1.) ONSLOW, a maritime county of N. Carolina, in Wilmington diſtrict, bounded E. by Carteret, SE. by the ocean, SW. by New Hanover and Duplin counties, and N. by Craven county. It contained 3639 citizens, and 1748 ſlaves in 1795. Swanſborough is the capital.

(2.) ONSLOW, a townſhip of Nova Scotia, in Halifax county; 35 miles NE. of Windſor, and 46 N. by W. of Halifax.

(1.) ONTARIO, a lake of N. America, in the country of the Iroquois, 180 miles long and 60 broad, or, as Mr Scott has it in his *United States Gazetteer*, 273 miles from E. to W. and 73 from N. to S. containing 2,390,000 acres. Many rivers run into it; and from it the ST LAURENCE proceeds.

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proceeds. It communicates with lake Erie by a river 33 miles long, in which is the remarkable cataract of NIAGARA. Its form is nearly oval. Its greateſt length is from SW. to NE. and its circumference about 600 miles. It abounds with fiſh of an excellent flavour, among which are the Oſwego baſs, weighing 3 or 4 lb. Near the SE. part it receives the waters of the Oſwego, and on the NE. it falls into the river Cataraque or Iroquois. It is one of that great chain of lakes, which ſeparate the United States from the Britiſh colonies in Upper Canada. It is ſituated between Lon. 76° 30′ and 80 W. and Lat. 43°. 15′. and 44°. N.

(2.) ONTARIO, an extenſive fertile county of New York, comprehending the country of GENESSEE; bounded on the N. by the above lake; (N° 1.) E. by Tyoga and Onondago counties; S. by Lycoming and Alleghany counties, and W. by the Niagara and Lake Erie. It contains about 6 millions of acres, of rich and fertile ground. It was only erected in 1789; in 1790, it had 1778 citizens and 11 ſlaves; but in 1796, it had increaſed ſo rapidly, that 1258 of its citizens were qualified to be electors. *Canadaqua* is the capital.

ONTES, a town of France, in the dep. of Mont Blanc, and ci-devant duchy of Savoy, 14 miles S. of Seiſſel.

* ONTOLOGIST. *n. ſ.* [from *ontology*.] One who conſiders the affections of being in general; a metaphyſician.

(1.) * ONTOLOGY. *n. ſ.* [ὀντα and λογος.] The ſcience of the affections of being in general; metaphyſicks; the modes, accidents and relations that belong to various beings, are copiouſly treated of in metaphyſicks, or more properly *ontology*. *Watts.*

(2.) ONTOLOGY. See METAPHYSICS, § 1.

ONTORIA, a town of Spain, in Aſturia, 45 miles NE. of Oviedo.

ONTOSOPHY, the ſame with ONTOLOGY.

ONTS, a town of Spain in Aſturia, 41 miles E. of Oviedo.

ONUM, a town of Sweden in W. Gothland.

ONUPHRIUS PANVINUS, a learned Italian, of the order of hermits of St Auguſtine. He was born of a noble family at Verona, in 1529; and became ſo indefatigable in his ſtudies, that he ſpent whole days and nights in reading the ancients; which made Manutius ſtyle him *Helluo Antiquitatis*. His firſt performance was A Chronicle of Popes and Cardinals, which was printed without his knowledge at Venice in 1557, and ſome time after more correctly by himſelf. He afterwards continued Platina's Lives of the Popes, from Sextus IV. to Pius V. and ſubjoined annotations. He alſo wrote four pieces upon Roman Antiquities, which are printed in Grævius's Collection. He died in his 39th year, in 1568.

* ONWARD. *adv.* [*ondeweard*, Saxon.] 1. Forward; progreſſively.—

When you went *onward* on this ended action,
I look'd upon her with a ſoldier's eye. *Shak.*

Satan was now at hand, and from his ſeat
The monſter, moving *onward*, came as faſt
With horrid ſtrides. *Milton.*

Him thro' the ſpicy foreſt *onward* come
Adam diſcern'd. *Milton.*

Not one looks backward, *onward* ſtill he goes,
Yet ne'er looks forward. *Pope.*

2. In a ſtate of advanced progreſſion.—Philoxenous came to ſee how *onward* the fruits were of his friend's labour. *Sidney.*—You are already ſo far *onward* of your way, that you have forſaken the imitation of ordinary converſe. *Dryden.* 3. Somewhat farther.—

A little *onward* lend thy guiding hand
To theſe dark ſteps. *Milton.*

(1.) * ONYCHA. *n. ſ.* It is found in two different ſenſes in ſcripture.—The odoriferous ſnail or ſhell, and the ſtone onyx. The greateſt part of commentators explain it by the onyx or odoriferous ſhell. The onyx is fiſhed for in the Indies, where grows the ſpica nardi, the food of this fiſh, and what makes its ſhell ſo aromatick. *Calmos.*—Take ſweet ſpices, *onycha*, and galbanum. *Exod.* xxx. 34.

(2.) ONYCHA is ſuppoſed by Jarchi, the Jewiſh interpreter to be the root of a certain ſpice; others think it opium or laudanum; others the bdellium.

ONYCOMANCY, or ONYMANCY. *n. ſ.* } a kind of divination by the nails of the fingers. The word is from the Greek ονυξ, *nail*, and μαντια, *divination*.—The ancient practice was to rub the nails of a youth with oil and ſoot, or wax; and to hold up the nails thus ſmeared againſt the ſun. Upon them were ſuppoſed to appear figures or characters which ſhowed the thing required.

(1.) * ONYX. *n. ſ.* [ονυξ.] The *onyx* is a ſemipellucid gem, of which there are ſeveral ſpecies, but the bluiſh white kind, with brown and white zones, is the true *onyx legitima* of the ancients. *Hill's Materia Medica.*

Nor are her rare endowments to be ſold
For glittering ſand by Ophir ſhown,
The blue-ey'd ſapphire, or rich *onyx* ſtone. *Sandys.*

—The *onyx* is an accidental variety of the agate kind; it is of a dark horny colour, in which is a plate of a bluiſh white, and ſometimes of red: when on one or both ſides the white, there happens to lie alſo a plate of a reddiſh or fleſh colour, the jewellers call the ſtone a ſardonyx. *Woodw.*

(2.) ONYX, in lithology, one of the ſemipellucid gems, with variouſly coloured zones, but none red. (See CHALCEDONY, and MINERALOGY, *Part* II, *Chap.* IV, *Claſs* I, *Ord.* I, *Gen.* VI, ii, *Sp.* 7. *Var.* 1.) There are 4 varieties of this gem. 1. A bluiſh white one, with broad white zones: 2. A very pure onyx, with ſnow white veins: 3. The jaſponyx, or horny onyx, with green zones: 4. The brown onyx, with bluiſh white zones. The ancients attributed wonderful properties to the onyx, and imagined that if worn on the finger it acted as a cardiac: they alſo recommended it as an aſtringent; but at preſent no regard is paid to it. The word ονυξ ſignifies *nail*; the poets feigning this ſtone to have been formed by the Parcæ from a piece of Venus's nail, cut off by Cupid with one of his arrows.

(3.) ONYX, in conchyliology, a ſpecies of VOLUTA, found in cabinets; but poliſhed, and not in its natural ſtate.

(4.) ONYX, in ichthyology, or the ONYX FISH, mentioned under ONYCHA, § 1, is found in the Red

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Red Sea, and has the property of being uncommonly odoriferous, whence it is a principal ingredient in the Indian perfumes. We have met with no deſcription of it.

(5.) ONYX, in zoology, a name given by Pliny and other ancient writers to the SOLEN.

ONZAIN, a town of France, in the dep. of Loir and Cher; 10 miles SW. of Blois.

ONZAN, a cape on the N. coaſt of Brazil.

ONZELLA, a river of Spain, which runs into the Arragon, at Sangueſa.

OOD, a town of Sweden, in W. Gothland.

OODAH-OOTATE, a river of Indoſtan, which runs into the Taptee; 18 miles SSW. of Burhampour.

OODEADURGAM, a town of Indoſtan, in Myſore; 73 miles S. of Seringapatam.

OODIMALLYCOTTA, a town of Indoſtan, in Coimbetore; 17 miles ESE. of Animally.

OODOOANULLAH, a town of Indoſtan, in Bengal, on the W. bank of the Ganges, at the foot of a hill. It was the ſeat of the government under Sultan Sujah, before he fell in the conteſt with his brother AURENG-ZEBE. (See INDIA, § 12.) The numerous grand ruins it contains afford a proof of his magnificence. It has an elegant bridge built by him over the Ganges. It is 82 miles N. by W. of Moorſhedabad. Lon. 87. 55. E. Lat. 24. 58. N.

OOISCONSING, a river of the North Weſtern Territory, which runs into the Miſſiſippi, in Lon. 92. 3. S. Lat. 42. 32. N.

OOISCONSINGS, a tribe of N. American Indians, who inhabit the banks of the above river. They have 300 warriors.

OONALASHKA, or UNALASHKA, one of the iſlands of the Northern Archipelago, viſited by Captain Cook in his laſt voyage. The natives are a very peaceable people, having been much poliſhed by the Ruſſians, who, however keep them in a ſtate of ſubjection. The iſland furniſhes them with ſubſtenance and cloathing, which is chiefly compoſed of ſkins. The upper garment, which is made like a waggoner's frock, reaches down to the knees. They alſo wear a waiſtcoat or two, a pair of breeches, a fur cap, and a pair of boots, the legs of which are formed of ſome ſtrong gut; but the ſoles and upper leathers are of Ruſſia leather. Fiſh and other ſea animals, birds, roots, berries, and ſea weeds, compoſe their food. They dry quantities of fiſh during the ſummer, which they lay up in ſmall huts for winter. They did not appear to be very deſirous of iron, nor to want any other inſtrument, excepting ſewing needles, their own being formed of bone. With theſe they ſew their canoes, make their clothes, and work very curious embroidery. They uſe, inſtead of thread, the fibres of plants, which they ſplit to the thickneſs required. All ſewing is performed by the females, who are ſhoe-makers, tailors, and boat-builders. They manufacture mats and baſkets of graſs, which are both ſtrong and beautiful. There is indeed a neatneſs and perfection in moſt of their works, that ſhows they are deficient neither in ingenuity nor perſeverance. Though the climate is ſometimes ſevere, Captain Cook did not obſerve a fire-place in any of their habitations. They are lighted as well as heated by lamps; which, though ſimple, effectually anſwer the purpoſe for which they are intended. They conſiſt of a flat ſtone, hollowed on one ſide like a plate; in the hollow part they put the oil, mixed with ſome dry graſs, which ſerves for a wick. Both ſexes often warm themſelves over one of theſe lamps, by placing it between their legs, under their garments, and ſitting thus over it for ſeveral minutes. Lon. 139. 29. E. Lat. 53. 5. N.

OONAMAK, an iſland in the N. Pacific Ocean, between Oonalaſhka, and Alaſhka, W. of Oonella. Lon. 192. 30. E. Lat. 54. 30. N.

OONELLA, an iſland of the Northern Archipelago, NE. of Oonalaſhka, being ſeparated from it by a navigable ſtrait. Its circumference is 21 miles, and the produce the ſame with that of Oonalaſhka.

OONEMAH, or OONAMAK. See OONAMAK.

OORT, Adam VAN, the ſon of Lambert Van Oort, a painter of conſiderable reputation for perſpective and architecture, was born at Antwerp, in 1557. He was inſtructed in the art by his father, and ſoon roſe into eſteem, not only as a painter of hiſtory, but of landſcape and portraits. But the greateſt honour of Van Oort is, that he was the firſt inſtructor of RUBENS, whoſe works have eternized his maſter's memory, along with his own. He painted a great number of deſigns for the altars of churches in Flanders, which have much merit, and are ſtill beheld with pleaſure by good judges. He was a manneriſt.

(1.) OOST, James VAN, a painter of hiſtory landſcape, and architecture, born at Bruges about 1600. He learned the art in his native city, but travelled to Italy, to ſtudy the works of the great maſters. Among theſe he attached himſelf particularly to the ſtyle of Annibal Caracci, and imitated him in ſuch a manner, as to ſurpriſe the moſt able connoiſſeurs at Rome. He died in 1671.

(2.) OOST, James VAN, ſon of the preceding, alſo acquired conſiderable fame; and died in 1713.

(3.) OOST. *n. ſ.* a kiln for drying hops after they are picked from the ſtalks.

OOSTBORCH, or OOSTBURG, } a town of Holland, in the dep. of the Meuſe, iſland of Cadſand, and late prov. of Dutch Flanders; 4 miles NE. of Sluys. Lon. 3. 29. E. Lat. 51. 22. N.

OOSTENBY, a town of Sweden, in the iſle of Oeland, 17 miles S. of Borkholm.

OOSTERADE, a town of Denmark, in Holſtein; 7 miles ENE. of Itzehoa.

OOSTERHOUT, and OOSTERWYCK, } 2 towns of Holland, in the department of the Dommel and Scheldt, and ci-devant province of Dutch Brabant; the former 6 miles NE. of Breda: and the latter 7 miles SW. of Bois-le-Duc.

OOSUMI, a town and diſtrict of Japan, in the iſland of Xima.

(1.) OOTAGAMIS, LOWER, a town of the North-Weſtern Territory, at the conflux of the Ooiſconſing with the Miſſiſippi. Lon. 92. 3. W. Lat. 42. 33. N.

(2.) OOTAGAMIS, UPPER, a town of the North-Weſtern Territory, on the Ooiſconſing, 40 miles from the Miſſiſippi. Lon. 91. 8. W. Lat. 42. 42. N.

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OOTAMA SCHOLOPERAM, a town of Indoſtan in Myſore.

(1.) OOTAMPALIAM, a town of Indoſtan, in Dindigul; 68 miles NNW. of Palamcotta.

(2.) OOTAMPALIAM, a valley of Indoſtan, among the Gauts, on the W. reaching from Paniany to Coimbetore.

OOTATORE, a town of Indoſtan, in the Carnatic, 22 miles NW. of Tanjore, and 80 SW. of Pondicherry.

* OOZE. *n. ſ.* [either from *eaux*, waters, Fr. or *bet*, wetneſs, Saxon.] 1. Soft mud; mire at the bottom of water; ſlime.—

My ſon i' th' *ooze* is bedded. *Shak.*

—Some carried up into their grounds the *ooze* or ſalt water mud, and found good profit thereby. *Carew.*—

Old father Thames raiſ'd up his rev'rend head,

Deep in his *ooze* he fought his ſedgy bed. *Dryd.*

2. Soft flow; ſpring. This ſeems to be the meaning in *Prior*.

From his firſt fountain and beginning *ooze*,
Down to the ſea each brook and torrent flows. *Prior.*

3. The liquor of a tanner's vat.

* *To* OOZE. *v. n.* [from the noun.] To flow by ſtealth; to run gently; to drain away.—

When the contracted limbs were cramp'd, even then
A wat'riſh humour ſwell'd and *ooz'd* again. *Dryden.*

The latent rill, ſcarce *oozing* thro' the graſs. *Thomſon.*

* OOZY. *adj.* [from *ooze*.] Miry; muddy; ſlimy.—

From his *oozy* bed,
Old father Thames advanc'd his rev'rend head. *Pope.*

* *To* OPACATE. *v. a.* [*opaco*, Latin.] To ſhade; to cloud; to darken; to obſcure.—The ſame corpuſcles, upon the unſtopping of the glaſs, did *opacate* that part of the air they moved in. *Boyle.*

(1.) * OPACITY. *n. ſ. opacite*, Fr. *opacitas*, Lat.] Cloudineſs; want of tranſparency.—Can any thing eſcape eyes in whoſe opticks there is no *opacity*? *Brown.*—Had there not been any night, ſhadow or *opacity*, we ſhould never have had any determinate conceit of darkneſs. *Glanville.*—How much any body hath of colour, ſo much hath it of *opacity*. *Ray.*—The *opacity* of bodies ariſeth from the multitude of reflexions cauſed in their internal parts. *Newton.*

(2.) OPACITY, in philoſophy, is a quality of bodies which renders them impervious to the rays of light.

* OPACOUS. *adj.* [*opacus*, Latin.] Dark; obſcure; not tranſparent.—*Opacous* bodies do not hinder the eye from judging light to have an equal diffuſion through the whole place that it irradiates. *Digby.*—

The firm *opacous* globe
Of this round world. *Milton.*

OPAH, or the *king fiſh*. See ZEUS. The body is deep; the ſcales exceedingly minute: it has ſetaceous teeth on the tongue only, one long dorſal fin, and a tale ſomewhat lunated. See *Plate* CCXLVII. The genus of which this is a ſpecies is not numerous: This, however, is conſiderably the largeſt, and with reſpect to its colours the moſt ſplendid. It is conſidered by many as the moſt beautiful fiſh that is found on the coaſt of Europe. Mr Pennant in his *Britiſh Zoology* gives the following account of this fiſh, which is exceedingly rare on the Britiſh coaſt: "We have only 4 inſtances (ſays he) of this fiſh being taken in our ſeas, each of them in the north, viz. twice off Scotland, once off Northumberland, and once in Filey-Bay, Yorkſhire. This laſt was caught about two years ago, and exhibited as a ſhow at Scarborough. It is of that genus which Linnæus diſtinguiſhes by the name of *Chætodon* from its briſtly teeth, and is ſaid to be very common on the coaſt of Guinea. (See CHÆTODON, but latter zoologiſts rank it under ZEUS.) It is well deſcribed by an anonymous writer in the *London Magazine* for October 1767, which we ſhall borrow, as the account is confirmed to us by Mr Travis, who had an opportunity of examining one of the ſame ſpecies. "Newcaſtle, Sept. 22. On Saturday laſt was thrown upon the ſands at Blyth, a very rare and beautiful fiſh, weighing between 70 and 80 lb. ſhaped like the ſea bream. The length was 3½ feet: the breadth from back to belly almoſt two feet; but the thickneſs from ſide to ſide not above ſix inches. The mouth ſmall for the ſize of the fiſh, forming a ſquare opening, and without any teeth in the jaws. The tongue thick, reſembling that of a man, but rough and thick ſet with beards or prickles pointing backwards, ſo that any thing might eaſily paſs down, but could not eaſily return back; therefore theſe might ſerve inſtead of teeth to retain its prey. The eyes remarkably large, covered with a membrane, and ſhining with a glare of gold. The cover of the gills like the ſalmon. The body diminiſhes very ſmall to the tail, which is forked and expands 12 inches: the gill fins are broad, about 8 inches long, and play horizontally: a little behind their inſertion the back fin takes its original, where it is about 7 inches high, but ſlopes away very ſuddenly, running down very near the tail, and at its termination becomes a little broader: the belly fins are very ſtrong, and placed near the middle of the body: a narrow fin alſo runs from the anus to the tail. All the fins, and alſo the tail, are of a fine ſcarlet; but the colours and beauty of the reſt of the body, which is ſmooth and covered with almoſt imperceptible ſcales, beggars all deſcription; the upper part being a kind of bright green, variegated with whitiſh ſpots, and enriched with a ſhinning golden hue, much reſembling the ſplendour of the peacock's feathers: this by degrees vaniſhes in a bright ſilver; and near the belly the gold begins again to predominate in a lighter ground than on the back."

(1.) * OPAL. *n. ſ.* [*opalus*, Lat.] The *opal* is a very elegant and ſingular kind of ſtone: it hardly comes within the rank of the pellucid gems, being much more opake, and leſs hard. It is in the pebble ſhape, from the head of a pin to the bigneſs of a walnut. It is naturally bright, and ſhows all its beauty without the help of the lapidary: in colour it reſembles the fineſt mother of pearl;

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pearl; its baſis ſeeming a bluiſh or greyiſh white, but with a property of reflecting all the colours of the rainbow, as turned differently to the light. *Hill.*—

Thy mind is a very *opal*. *Shak.*

Th' empyreal heav'n, extending wide
In circuit, undetermin'd ſquare or round;
With *opal* tow'rs, and battlements adorn'd
Of living ſapphire. *Milton.*

—We have this ſtone from Germany, and it is the ſame with the *opal* of the ancients. *Woodward.*

(II.) OPAL, in Lithology, a ſpecies of the chroaſtaces genus of gems, or, according to Dr Thomſon, of the genus of ſtones, whoſe ſymbol is S. See MINERALOGY, *Part* II. *Sect.* II. *Chap.* IV. *Order* I. *Gen.* II. *Sp.* 4. There are 3 varieties. This ſpecies of precious ſtone is generally eſteemed the moſt beautiful of all the flinty tribe, owing to its changeable appearance when viewed by reflection.—The form is that of a pebble, like the agate, with which authors formerly claſſed it. The ſpecies formerly enumerated were,

1. *The* OPAL of NONNIUS appears olive-coloured by reflection, and then opaque: but when held between the eye and the light, is tranſparent, and a beautiful ruby colour. Boccede Boot, author of the *Complete Jeweller*, conſiders it as the moſt precious ſort of opal, and indeed the moſt wonderful of this kind! he gives a lofty encomium upon it, chiefly from Pliny, who called this opal PÆDEROS. This ſpecies is the SANGENON of India, and *nannius* of the ancients and modern Europeans, from the Roman ſenator Nonnius, poſſeſſor of the famous opal of Rome, worth 20,000 ſeſterces, who preferred baniſhment to parting with it to Anthony. An opal anſwering exactly to Pliny's deſcription of the nonnius was diſcovered about 45 years ago in the ruins of Alexandria, and purchaſed for a trifle by the French conſul Lironcourt, from his dragoman, Roboly. The duke of Nivernois, when ambaſſador in London in 1763, was in poſſeſſion of this ſtone. The next in eſteem and value is the Iris opal, of a glaſſy white colour, but when looked through it appears of a flame-colour, as the nonnius does of a ruby. There is another of the ſame ſpecies in Sweden, which by reflection appears of a brownish colour, but by refraction is red with violet veins.

2. OPAL, THE SEMITRANSPARENT, or *bluiſh opal*, is leſs valued by jewellers, than the others, on account of its being ſuppoſed more eaſily imitable by art. It is found in Hungary, Silefia, and Saxony.

3. OPAL, THE WHITE, having its ground of a white glaſs-like complexion, from whence green, yellow, bluiſh, and purple rays are thrown out; but when held againſt the light it appears of a reddiſh or rather flame colour. Wallerius, in his Mineralogy, ſays, that this white opal anſwers the deſcription of it given by Pliny much better than the one above deſcribed, N° 1. There are two varieties of it: 1. The *oriental opal*, ſhowing many colours. (See MINERALOGY, *ibid. var.* 1.) Lugenſtroom obtained a ſmall piece of pſeudo-agate from the Eaſt Indies, of a yelloviſh brown and pale blue, or rather milk colour, with a mixing brightneſs, exactly like that of the milky opals already mentioned; alſo ſome other ſpecimens near Turin where they are called *baſtard agates*. Sometimes the opal is ſurrounded with a white cruſt, like common flints in the ſtrata of chalk. This oriental ſpecies is found in Ceylon, where it is called the *elementary ſtone*. The Indians put as high a value on it as on the diamond. 2. There is another variety much valued, called the *flaming opal*, becauſe it changes its colours, as if ſparks of fire eſcaped from it in parallel lines.

(III.) OPALS, IMITATIONS OF. M. Magellan has ſeen ſome glaſs paſtes made in London by Edward Delaval, Eſq.; and others by Mr More, ſecretary to the Society of Arts, which appeared of a yellow-brown or other colour by reflection; but when held againſt the light, tranſmitted a fine blue, purple, or red colour, like the ſapphires, rubies, garnets, and other precious ſtones.—Wallerius gives directions for making theſe paſtes. The fine imitations of the true white opals, which Pliny ſays were made by the Indians, have, in Magellan's opinion, hitherto baffled the art of the moderns.

(IV.) OPALS, VARIETIES, VALUE AND PHENOMENA OF. Mr Born mentions what he calls an *avanturine cat's eye*, of a fleſh colour and tranſparent, poſſeſſing the curious ſtructure of the avanturine, viz. compoſed of little plates like ſcales, with a metallic ſplendour, which reflect the rays of light like the opal. This ſtone ſeems to have led authors to claſs the avanturine with the opal, although it is in fact a fine opaque quartz. Ruſſia produces the opal at the Katſcha, near the city of Kraſnajark, in the Altaic mountains in Siberia. The cat's eye is found in Mount Caucaſus, and is often confounded with the opal, though improperly. See ASTERIA. The oculus mundi, (See HYDROPHANES LAPIS, N° 16; and MINERALOGY, as above, *Sp.* 4. *Var.* 2.) has a very intimate connection with the opal, being generally found in beds over it, and being regarded by ſome naturaliſts as the ſame ſtone in a ſtate of decompoſition by the action of the air. Ruſſia poſſeſſes this ſtone in the Altaic mountains, where the opals are found. No method of eſtimating the opals is given by authors. But thoſe of uncommon beauty and ſize are ſold for very large ſums. The late Leopold II. emperor of Germany, was in poſſeſſion of an oriental ſtone, ſometimes deſcribed as a cat's eye and ſometimes as an opal, of one inch diameter, and which was valued at a great price. Prince Potemkin, the late Ruſſian gen. purchaſed for 1000 ducats a ſtone of the ſame kind, ſaid to have been taken by the famous Nadir Shah from the head of a Gentoo idol, of which it made one of the eyes. With many other gems it diſappeared from the tent of the Perſian conqueror when he was aſſaſſinated. Opals are commonly found in detached pieces, in an envelope of a different kind of ſtone, from the ſize of a pin-head to that of a walnut. Beautiful opals of this laſt ſize are extremely rare; ſo that it is difficult to find an opal ſufficiently perfect and large to be completely poſſeſſed of all its beauties: this renders it ſo precious, and makes it almoſt impoſſible to determine its value. It has been agreed, however, to value a beautiful oriental opal at double the price of a ſapphire of the ſame ſize. It is remark-

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able, that all the beautiful colours of the opal entirely change or disappear when the stone is divided into pieces. This phenomenon, which has been demonstrated more than once, leads us to think, that all the sparkling play of the opal is owing to the refraction of the rays of the sun from the surface of the stone, which is naturally formed to produce this refraction.

OPALIA, in antiquity, feasts celebrated at Rome in honour of the goddess Ops. Varro says they were held on the 19th of December, which was one of the days of the Saturnalia: these two feasts were celebrated in the same month, because Saturn and Ops were husband and wife: the vows offered to the goddess were made sitting on the ground.

* OPAQUE. *adj.* [*opacus*, Lat.] Dark; not transparent; cloudy.—

No way round
Shadow from body *opaque* can fall.
Milt. Par. Lost.

—These disappearing fixt stars were actually extinguished and turned into more *opaque* and gross planet-like bodies. *Cheyne's Phil. Prin.*

OPATCHIN, a town of Kamschatka.

OPATOW, a town of Poland, in Sandomirz.

OPDAELSCHOW. See OPDALSCHOW.

OPDAL, and OPDALSCHOW, } two towns of Norway, in Drontheim: the former 54 miles S. and the latter 8 miles SW. of Drontheim.

* OPE. } *adj.* [*Ope* is scarcely used but by
* OPEN. } old authors, and by them in the primitive, not figurative sense.] 1. Unclosed; not shut.

The gates are *ope*; now prove good seconds.
Shak.

Most sacrilegious murther hath broke *ope*
The Lord's anointed temple. *Shak. Macbeth.*

—Then sent Sanballat his servant, with an *open* letter in his hand. *Neh.* vi. 5.—

With the same key set *ope* the door
Wherewith you lock'd it fast before. *Cleav.*

Thro' the gate,
Wide *open* and unguarded, Satan pass'd. *Milton.*

They meet the chiefs returning from the fight,
And each with *open* arms embrac'd her chosen knight. *Dryd.*

He, when Æneas on the plain appears,
Meets him with *open* arms. *Dryd.*

The bounce broke *ope* the door. *Dryd.*

The door was *ope*, they blindly grope the way. *Dryd.*

2. Plain; apparent; evident; public.—They put him to an *open* shame. *Heb.* vi. 6.—

He irefully enrag'd would needs to *open* arms.
Drayton.

Where *open* acts accuse, th' accuse is vain.
Dan.

3. Not wearing disguise; clear; artless; sincere.—Not daring to be *open*, to no creature he ever spake of it. *Sidney.*—Lord Cordes, besides, was held a man *open* and of good faith. *Bacon.*—The French are always *open*, familiar, and talkative; the Italians stiff, ceremonious, and reserved. *Addison.*—This reserved mysterious way of acting towards persons, who in right of their posts expected a more *open* treatment, was imputed to some hidden design. *Swift.*

His generous, *open*, undesigning heart,
Has begg'd his rival to solicit for him. *Cato.*

4. Not clouded; clear.—

With dry eyes, and with an *open* look,
She met his glances midway. *Dryd. Boccace.*

Then shall thy Craggs
On the cast ore another Pollio shine;
With aspect *open* shall erect his head. *Pope.*

5. Not hidden; expos'd to view.—In that little spot of ground that lies between those two great oceans of eternity, we are to exercise our thoughts, and lay *open* the treasures of the divine wisdom and goodness. *Burnet.*—Moral principles require reasoning and discourse to discover the certainty of their truths: they lie not *open* as natural characters engraven on the mind. *Locke.* 6. Not restrained; not denied; not precluded.—If Demetrius and the craftsmen have a matter against any man, the law is *open*. *Acts* xix. 38. 7. Not cloudy; not gloomy.—An *open* and warm winter portendeth a hot and dry summer. *Bacon's Nat. Hist.* 8. Uncovered.—

Here is better than the *open* air.
Shak. K. Lear.

Turtle-like, I'll to my mate repair;
And teach you your first flight in *open* air.
Dryden.

9. Exposed; without defence.—

The service that I truly did his life,
Hath left me *open* to all injuries. *Shak. Hen.* IV. 10. Attentive.—Thine eyes are *open* upon all the sons of men. *Jer.* xxxii. 19.—The eyes of the Lord are upon the righteous, and his ears are *open* unto their cry. *Ps.* xxxiv. 15.

(1.) * *To* OPE. } *v. a.* [*open*, Saxon; *op*, Islan-
(1.) * *To* OPEN. } dick, a hole. *Ope* is used only in poetry, when one syllable is more convenient than two.] 1. To unclose; to unlock; to put into such a state as that the inner parts may be seen or entered: the contrary to *shut*.—

The world's mine oyster,
Which I with sword will *open*.
Shak. M. W. of Windsor.

Before you fight, *ope* this letter. *King Lear.*—To *ope* the gates, and so let in our foe. *Fairfax.*—If a man *open* a pit and not cover it, and an ox fall therein, the owner of the pit shall make it good. *Ex.* xxi. 23.—Let us pass through your land, and none shall do you any hurt; howbeit they would not *open* unto him. 1 *Mac.* v. 48.—*Open* thy mouth for the dumb. *Prov.* xxxi. 8.—

Adam, now *ope* thine eyes. *Milt. Par. Lost.*—The draw-bridges at Amsterdam part in the middle, and a vessel, though under sail, may pass them without the help of any one on shore; for the mast-head, or break-water of the ship bearing against the bridge in the middle, *opens* it.
Brown.

Where Tuscan Tyber rolls with rapid force,
And where Numicus *opes* his holy source.
Dryd.

When first you *ope* your doors, and passing by,
The sad ill-omen'd object meets your eye. *Dryd.*

My old wounds are *open'd* at this view. *Dryd.*

—When

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—When the matter is made, the ſide muſt be *opened* to let it out. *Arbuthnot on Aliments.* 2. To ſhow; to diſcover.—The Engliſh did adventure far for to *open* the north parts of America. *Abbot's Deſcription of the World.* 3. To divide; to break.—The wall of the cathedral church was *opened* by an earthquake, and ſhut again by a ſecond. *Addiſon on Italy.* 4. To explain; to diſcloſe.—Some things wiſdom *openeth* by the ſacred books of ſcripture. *Hooker.*—Paul reaſoned with them out of the Scriptures, *opening* and alleging, that Chriſt muſt needs have ſuffered and riſen again from the dead. *Acts.* xvii. 3.—After the earl of Lincoln was ſlain, the king *opened* himſelf to ſome of his council, that he was ſorry for the earl's death. *Bacon's Henry* VII.—Gramont, governor of Bayonne, took an exquiſite notice of their perſons and behaviour, and *opened* himſelf to ſome of his train. *Wotton.*—A friend who relates his ſucceſs, talks himſelf into a new pleaſure; and by *opening* his misfortunes, leaves part of them behind him. *Collier on Friendſhip.* 5. To begin; to make the initial exhibition.—You retained him only for the *opening* of your cauſe. *Dryd. Ep. to the Whigs.*—Homer *opens* his poem with the utmoſt ſimplicity and modeſty. *Notes on Odyſſey.*

(2.) * *To* OPE. } *v. n.* 1. To unclooſe itſelf;
(2.) * *To* OPEN. } not to remain ſhut; not to continue cloſed.—

The hundred doors
Ope of themſelves. *Dryd. Æneid.*

Unnumber'd treaſures *ope* at once. *Pope.*

2. To bark. A term of hunting.—If I cry out thus upon no trail, never truſt me when I *open* again. *Shak. Merry Wives.*—

The night reſtores our actions done by day;
As hounds in ſleep will *open* for their prey.
Dryd.

Hark! the dog *opens*, take thy certain aim;
The woodcock flutters. *Gay's Rural Sports.*

* OPENER. *n. ſ.* [from *open.*] 1. One that opens; one that unlocks; one that unclooſes.—

True *opener* of mine eyes,
Much better ſeems this viſion, and more hope
Of peaceful days portends, than thoſe two paſt.
Milton.

2. Explainer; interpreter.—

The very *opener* and intelligencer
Between the grace, the ſanctities of heav'n,
And our dull workings. *Shak. Henry* IV.

3. That which ſeparates; diſuniter.—There may be ſuch *openers* of compound bodies. *Boyle.*

* OPENEYED. *adj.* [*open* and eye.] Vigilant; watchful.—

While you here do ſnoring lie,
Openeyed conſpiracy
His time doth take. *Shak. Tempeſt.*

* OPENHANDED. *adj.* [*open* and *hand*] Generous; liberal; munificent.—

Good heav'n, who renders mercy back for mercy,
With *openhanded* bounty ſhall repay you. *Rowe.*

* OPENHEARTED. *adj.* [*open* and *heart.*] Generous; candid; not meanly ſubtle.—

I know him well; he's free and *openhearted.*
Dryd.

—Of an *openhearted* generous miniſter you are not to ſay that he was in an intrigue to betray his country; but in an intrigue with a lady. *Arbuthnot.*

* OPENHEARTEDNESS. *n. ſ.* [*open* and *heart.*] Liberality; frankneſs; ſincerity; munificence; generoſity.

* OPENING. *n. ſ.* [from *open.*] 1. Aperture; breach.—The fire thus makes its way up through the cracks and *openings* of the earth. *Woodward's Nat. Hiſt.* 2. Diſcovery at a diſtance; faint knowledge; dawn.—God has been pleaſed to diſſipate this confuſion and chaos, and to give us ſome *openings*, ſome dawnings of liberty and ſettlement. *South's Sermons.*—The *opening* of your glory was like that of light; you ſhone to us from afar. *Dryd.*

* OPENLY. *adv.* [from *open.*] 1. Publicly; not ſecretly; in ſight; not obſcurely.—Their actions always ſpoken of with great honour, are now called *openly* into queſtion. *Hooker.*—Prayers are faulty, not whenſoever they be *openly* made, but when hypocriſy is the cauſe of open praying. *Hooker.*

Why ſhould you have put me to deny
This claim which now you wear ſo *openly?*
Shak.

I no more ſhould live obſcure,
But *openly* begin, as beſt becomes
Th' authority which I deriv'd from heav'n.
Milton.

—How groſsly and *openly* do many of us contradict the precepts of the goſpel, by our ungodlineſs! *Tillotſon.*—We expreſs our thanks by *openly* owning our parentage, and paying our common devotions to God. *Atterbury.* 2. Plainly; apparently; evidently; without diſguiſe.—

Darah
Too *openly* does love and hatred ſhow. *Dryd.*

* OPENMOUTHED. *adj.* [*open* and *mouth.*] Greedy; ravenous; clamorous; vociferous.—Upcomes a lion *openmouthed* towards the aſs. *L'Eſtrange.*

* OPENNESS. *n. ſ.* [from *open.*] 1. Plainneſs; clearneſs; freedom from obſcurity or ambiguity.—

Deliver with more *openneſs* your anſwers
To my demands. *Shak. Cymbeline.*

2. Plainneſs; freedom from diſguiſe.—The noble *openneſs* and freedom of his reflections are expreſſed in lively colours. *Felton on the Claſſics.*—Theſe letters, all written in the *openneſs* of friendſhip, will prove what were my real ſentiments. *Pope's Letters.*

(1.) * OPERA. *n. ſ.* [Italian]—An *opera* is a poetical tale or fiction, repreſented by vocal and inſtrumental muſic, adorned with ſcenes, machines, and dancing. *Dryden's Preface to Albion.*—You will hear what plays were acted that week, which is the fineſt ſong in the *opera.* *Law.*

(2.) *An* OPERA is a dramatic compoſition, ſet to muſic, and ſung on the ſtage, accompanied with muſical inſtruments, and enriched with magnificent dreſſes, machinery, and other decorations. See MUSIC, *Hiſt.* § 67, 70—72; and POETRY, *Part* II.

(3.) OPERA, ITALIAN. Italy, where muſic has always been cultivated with moſt ſucceſs, was the birth-place of the Opera, and from thence it has been imported into every country, where theatri-

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cal amuſements are held in eſteem. It was not attempted in England until the end of the 17th century; and its introduction experienced the oppoſition of thoſe who then dictated on all ſubjects connected with literature. They juſtly ridiculed the monſtrous abſurdity of regulating the moſt ſerious events of tragedy by an orcheſtra; and even to the comic exhibitions they objected, on account of their being performed in a language not generally underſtood. They remonſtrated on the impropriety of ſquandering away large ſums of money on foreigners, and neglecting the merit of eminent Britiſh performers. The muſic, however, at the Italian opera, was ſo exquiſite, that crowded audiences were never wanting. Faſhion patroniſed it, and a ſucceſſion of new performers gave it conſtantly increaſing eclat. The eſtabliſhment of this theatre is now extenſive, and more brilliant than any in London. The ſcenery is moſt ſplendid, and the ſalaries of the performers are enormous. Not Rowe, not Sheridan, not Shakeſpeare, can prevent the Engliſh theatre from being conſidered a *bore*, which is only occaſionally to be endured, while the dear delightful opera continues the nightly reſort of rank and beauty. It is proper, however, to add, that at the King's Theatre, a gratification is afforded, in the *Ballet*, to the eye as well as the ear; and more of the loungers who frequent the boxes of the Operahouſes are attracted by the luxurious diſplay of female elegance, than by the magic of ſweet ſounds.

* OPERABLE. *adj.* [from *operor*, Latin.] To be done; practicable. Not in uſe.—Being incapable of *operable* circumſtances, or rightly to judge the prudentiality of affairs, they only gaze upon the viſible ſucceſs. *Brown's Vulg. Err.*

OPERA-GLASS. See DIOPTRICS, § 49.

* OPERANT. *adj.* [*operant*, French.] Active; having power to produce any effect. A word not in uſe, though elegant.—

Earth, yield me roots!
Who ſeek's far better of thee, ſauce his palate
With thy moſt *operant* poiſon. *Shak. Timon.*
My *operant* powers their functions leave.
Shak.

* *To* OPERATE. *v. n.* [*operor*, Latin; *operer*, French.] To act; to have agency; to produce effects; with *on* before the ſubject of operation.—The virtues of private perſons *operate* but *on* a few. *Atterbury.*—Bodies produce ideas in us, manifeſtly by impulſe, the only way which we can conceive bodies *operate on*. *Locke.*—It can *operate on* the guts and ſtomach, and thereby produce diſtinct ideas. *Locke.*—A plain convincing reaſon *operates on* the mind, both of a learned and ignorant hearer, as long as they live. *Swift.*—Where cauſes *operate* freely, with a liberty of indifference to this or the contrary, the effect will be contingent. *Watts.*

(1.) * OPERATION. *n. ſ.* [*operatio*, Lat. *operation*, French.] 1. Agency; production of effects; influence.—There are in men *operations*, natural, rational, ſupernatural, ſome politick, ſome finally eccleſiaſtical. *Hooker.*—

By all the *operations* of the orbs,
From whom we do exiſt and ceaſe to be,
Here I diſclaim all my paternal care. *K. Lear.*

—All *operations* by tranſmiſſion of ſpirits, and imagination, work at a diſtance, and not at touch. *Bacon's Nat. Hiſt.*—Waller's preſence had an extraordinary *operation* to procure any thing deſired. *Clarendon.*—

The tree whoſe *operation* brings
Knowledge of good and evil, ſhun to taſte.
Milton.

—If the *operation* of theſe ſalts be, in convenient glaſſes, promoted by warmth, the aſcending ſteams may eaſily be caught and reduced into a penetrant ſpirit. *Boyle.*—Speculative painting, without the aſſiſtance of manual *operation*, can never attain to perfection. *Dryden's Dufreſnoy.*—The pain and ſickneſs cauſed by manna are the effects of its *operation* on the ſtomach and guts. *Locke.* 2. Action; effect. This is often confounded with the former ſenſe.—Repentance and renovation conſiſt not in the ſtrife, wiſh, or purpoſe, but in the actual *operations* of good life. *Hamm.*—Many medicinal drugs of rare *operation*. *Heylyn.*—

That falſe fruit
Far other *operation* firſt diſplay'd,
Carnal deſire inflaming. *Milt. Par. Loſt.*

—The offices appointed, and the powers exerciſed in the church, by their inſtitution and *operation* are holy. *Pearſon.*—Theſe qualities are not ſubſiſtent in thoſe bodies, but are *operations* of fancy begotten in ſomething elſe. *Bentley.* 3. [In chirurgery.] The part of the art of healing which depends on the uſe of inſtruments. 4. The motions or employments of an army.

(2.) OPERATION, in ſurgery and medicine (§ 1. *def.* 3.), denotes a methodical action of the hand on the human body, to re-eſtabliſh health.

* OPERATIVE. *adj.* [from *operate*.] Having the power of acting; having forcible agency; active; vigorous; efficacious.—To be over curious in ſearching how God's all-piercing and *operative* ſpirit, diſtinguiſhing, gave form to the matter of the univerſal, is a ſearch like unto his, who, not contented with a known ford, will preſume to paſs over the greateſt rivers in all parts. *Raleigh.*—He thought a little diſcountenance upon thoſe perſons would ſuppreſs that ſpirit within themſelves, or make the poiſon of it leſs *operative* upon others. *Clarendon.*—In actions of religion we ſhould be zealous, active, and *operative*, ſo far as prudence will permit. *Taylor.*—This circumſtance of the promiſe muſt give life to all the reſt, and make them *operative* toward the producing of good life. *Decay of Piety.*—It holds in all *operative* principles, eſpecially in morality; in which, not to proceed, is certainly to go backward. *South.*—The will is the concluſion of an *operative* ſyllogiſm. *Norris.*

* OPERATOR. *n. ſ.* [*operateur*, French; from *operate*.] One that performs any act of the hand; one who produces any effect.—An imaginary *operator* opening the firſt with a great deal of nicety, upon a curſory view it appeared like the head of another. *Addiſon's Spect.*—To adminiſter this doſe, there cannot be fewer than fifty thouſand *operators*, allowing one *operator* to every thirty. *Swift.*

* OPEROSE. *adj.* [*operoſus*, Lat.] Laborious; full of trouble and tediouſneſs.—Such an explication is purely imaginary, and alſo very *operoſe*. *Burnet's*

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Burnet's Theory.—Written language, as it is more *operose*, so it is more digested, and is permanent. *Holder.*

OPETOPEC, a fertile island of the United States, with a town so named, in Lake Nicaragua, 18 miles E. of Nicaragua.

OPGINSKAIA, or *Opeginskaia*, a town of Russia, in Novogorod; 60 miles E. of Novogorod.

OPHELM, a town of Norway, in Bergen.

OPHELTES. See NEMEAN GAMES.

OPHIDIUM, a genus of fishes belonging to the order of apodes. The principal characters are these: The head is somewhat naked; the teeth are in the jaws, palate, and fauces; the body long; the fins of the back, tail, and anus, confounded in one; no fin on the under part of the body; and the eyes covered by the common skin. Of this genus there are several species, of which the most curious is the

OPHIDIUM BARBATUM of Linnæus, thus described by Dr Broussonet in the 71st vol. of the *Phil. Trans.* "The scales of the ophidium (says he) are irregularly placed and dispersed over the whole body. Their form is sometimes round, sometimes nearly oval. They are larger near the head, and in the lower part of the body; but are hardly to be distinguished near the tail. They adhere to the body by means of a particular transparent skin, which is in general very thin, but somewhat thicker near the neck, and extended loosely over the whole head: this skin is very easily destroyed, after which the scales falling, the body appears spotted: *fig.* 1. *Pl.* CCXLVIII. When you look at them with the naked eye (*fig.* 2.), they appear as covered with very small grains; but viewed through a microscope (*fig.* 3.), the middle of them appears more elevated than the margin; and from the centre to the margin, close by each other, there are many lines or rays formed by small scales placed one upon another, like tiles upon a roof, the superior being always the nearer to the centre. This sort of scales, which may be called *umbonatæ*, are fastened to the body by very small vessels which are inserted in their middle; they are to be seen on the body only, not on the head nor the fins." The anatomy of this fish comprehends some very remarkable circumstances, which, our author thinks, were never observed in any other species. When the skin is drawn off, there appears a thin membrane of a silver colour, which covers the muscles. The muscles being removed, we find the peritoneum, which lines the abdominal cavity, and is adherent to the swimming bladder by some elongations. It is of a silver hue, with some very small black points. The ventricle is not to be distinguished from the intestines by any other mark but by its size; its form is oblong; it is extended almost to the anus, whence the intestinal duct has a retrograde course, and then descends again, having a little dilatation near the anus. On the vertebræ next the anus, on the outside of the peritoneum, is a kind of cavity of an oblong form, containing a reddish viscus, which he takes to be the kidney. The first vertebra from the head has nothing very remarkable in its structure. The 2d has on each side an elongated and sharp apophysis, to the apex of which is annexed a small ligament. The 3d is very flat, and has on each side a kind of triangular and sharp apophysis, to which adheres a ligament, as to the second. The 4th is remarkable in having a sharp apophysis on each side, articulated with the body of the vertebra; and under each of them is another articulated apophysis, flattish, thick, roundish at its extremities, and forked at its basis, *fig.* 5. The 5th, which is strongly adherent to the former, has in its middle a bifid process. The 6th has in its middle a flattish elevation, sharp on each side. Between the extremity of the larger apophysis of the 4th vertebra is a bone, or rather a hard cartilage, which bears the figure of a kidney (*fig.* 6.), its convexity being turned towards the body of the vertebra: its position is parallel to the bodies of the vertebræ; its motion is half circular; one of its parts, viz. the lowest, being in the cavity of the swimming bladder, to which it adheres by a thin membrane, so that no air can escape at that part. It is covered by membranes, which adhere strongly to its middle; in this part are fastened the two ligaments of the apophysis of the 2d and 3d vertebræ, which are of a great tennity. In the same point are fastened also two ligaments, each of which belongs to an oblong muscle parallel to each other, and fixed to the bones of the lowest and posterior part of the head, *fig.* 4. All this apparatus is certainly subservient to the purpose of swimming; but it is very remarkable, that if these parts are necessary to some animal function, they should not be found in all the individuals; "for I have seen (says our author) two, of which the vertebræ were not different from the vertebræ of the other species; which difference depends, perhaps, on the difference of sex. I am inclined to believe so; but the generation in this fish seems to be no less mysterious than that of the eel: I could never distinguish a male from a female in this species." This fish commonly grows to the size of 8 or 9 inches. It is found in all the Mediterranean sea, and in great plenty in the Adriatic: its flesh is not of a good taste, rather coarse, as is that of all the species of fishes which, having no ventral fins, are obliged to make great efforts in swimming, and have consequently the muscles harder.

OPHIOGLOSSUM, ADDER'S TONGUE, a genus of the natural order of filices, belonging to the cryptogamia class of plants. The spike is articulated, flat, and turned to the two sides; with the articuli or joints opening across. There are 7 species, of which the only remarkable one is the

OPHIOGLOSSUM VULGATUM, the common adder's tongue, which is a native of several places of Britain, growing in meadows and moist pastures. The country people make an ointment of the fresh leaves, and use it as a vulnerary to green wounds; which is a very ancient application, recommended by Matthiolus, Tragus, and others.

OPHIOMANCY, *n. s.* in antiquity, the art of making predictions from serpents. Thus Calchas, on seeing a serpent devour 8 sparrows with their dam, foretold the duration of the siege of Troy: and the 7 coils of a serpent that was seen on Anchises's tomb, were interpreted to mean the 7 years that Æneas wandered from place to place before he arrived at Latium.

OPHIOPHAGI,

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OPHIOPHAGI, ſerpent-eaters. See ETHIOPIA, § 3.

* OPHIOPHAGOUS. *adj.* [ὄφις and φαγω.] Serpent-eating. Not uſed.—All ſnakes are not of ſuch poiſonous qualities as common opinion preſumeth; as is confirmable from *ophiophagous* nations, and ſuch as feed upon ſerpents. *Brown.*

OPHIORRHIZA, in botany, a genus of the monogynia order, belonging to the pentandria claſs of plants; and in the natural method ranking under the 47th order, *Stellatæ*. The corolla is funnel-ſhaped; the capſule twin, bilocular, and polyſpermous. There are two ſpecies; the moſt remarkable is the

OPHIORRHIZA ASIATICUM, or *true lignum colubrinum*. The root of this is known in the Eaſt Indies to be a ſpecific againſt the poiſon of that moſt dreadful animal called the *hooded ſerpent*. There is a treatiſe in *Amæn. Acad.* tom. iv. upon this ſubject, wherein the author, John And. Darelius, undertakes, from the deſcription of ſuch authors as had ſeen it upon the ſpot, to aſcertain the plant from which the genuine root is taken. It appears in this account, that it had puzzled the European phyſicians; and what had been ſold in the ſhops for it, is the root of a very different plant, and of a poiſonous nature. The true root is called *mungus*, for the following reaſon.—There is a kind of weaſel in the Eaſt Indies, called *mungutia* by the natives, *mungo* by the Portugueſe, and *muncas* by the Dutch. This animal purſues the hooded ſerpent, as the cat does the mouſe. As ſoon as the ſerpent appears, the weaſel attacks him; and if ſhe chances to be bit by him, ſhe immediately runs to find a certain vegetable, upon eating which ſhe returns, and renews the fight.—The Indians are of opinion that this plant is the mungus. That celebrated traveller Kæmpfer, who kept one of theſe weaſels tame, that eat with him, lived with him, and was his companion wherever he went, ſays he ſaw one of theſe battles between her and the ſerpent, but could not certainly find out what root the weaſel looked for. But whether the weaſel firſt diſcovered this antidote or not, it is an infallible remedy againſt the bite of the hooded ſerpent.

OPHIOXYLON, in botany, a genus of the moncœcia order, belonging to the polygamia claſs of plants; and in the natural method ranking with thoſe of which the order is doubtful. The hermaphrodite calyx is quinquefid; the corolla quinquefid and funnel-ſhaped; with a cylindrical nectarium within its mouth.

(1.) OPHIR, or *Aufir*, a ſon of Joktan, who is ſuppoſed to have given name to the land of OPHIR. See N° 2.

(2.) OPHIR, a country mentioned in Scripture, from which Solomon had great quantities of gold brought home in ſhips which he ſent for that purpoſe; but reſpecting the ſituation of which authors are much divided in opinion. Some have gone to the Weſt, others to the Eaſt Indies, and the eaſtern coaſts of Africa, in ſearch of it. But the two opinions which have been moſt plauſibly ſupported, are thoſe of Mr Bruce, the Abyſſinian traveller, and Dr Doig, author of *Letters on the Savage State*. The latter holds that Ophir was ſomewhere on the W. coaſt of Africa; the former is ſatisfied that it was the country which is now called Sofala, a kingdom of Africa, on the coaſt of Moſambique, near Zanguebar. See SOFALA.

OPHIRA, in botany, a genus of the monogynia order, belonging to the octandria claſs of plants. The involucrum is bivalvular and triflorous; the corolla tetrapetalous above; the berry unilocular.

OPHIS, a river of Arcadia, which runs into the Alpheus.

(1.) * OPHITES. *n. f.* A ſtone reſembling a ſerpent.—*Ophites* has a duſky greeniſh ground, with ſpots of a lighter green, oblong, and uſually nearly ſquare. *Woodward.*

(2.) OPHITES, in lithology, is a ſort of variegated marble, otherwiſe called SERPENTINE. See MARBLE, and NAXOS, N° 1.

(3.) OPHITES, *plur.* in church hiſtory, Chriſtian heretics, ſo called both from the veneration they had for the ſerpent that tempted Eve, and the worſhip they paid to a real ſerpent: they pretended, that the ſerpent was Jeſus Chriſt, and that he taught men the knowledge of good and evil. They diſtinguiſhed between *Jeſus* and *Chriſt*: Jeſus, they ſaid, was born of the Virgin, but Chriſt came down from heaven to be united with him; Jeſus was crucified, but Chriſt had left him to return to heaven. They diſtinguiſhed the God of the Jews, whom they termed *Jaldabaoth*, from the ſupreme God: to the former they aſcribed the body, to the latter the ſoul of men. They had a live ſerpent, which they kept in a kind of cage; at certain times they opened the cage-door, and called the ſerpent: the animal came out, and, mounting upon the table, twined itſelf about ſome loaves of bread; this bread they broke, and diſtributed it to the company, who all kiſſed the ſerpent: this they called their *Euchariſt*.

(1.) OPHIUSA, an iſland near Crete.

(2.) OPHIUSA, the ancient name of RHODES.

(3.) OPHIUSA, an iſland of the BALEARES.

(4.) OPHIUSA, a town of Sarmatia.

OPHRYNIUM, an ancient town of Troas, on the Helleſpont, where Hector had a grove.

OPHRYS, TWYBLADE, a genus of the diandria order, belonging to the gynandria claſs of plants; and in the natural method ranking under the 7th order, *Orchideæ*. The nectarium is a little carinated below. The ſpecies are numerous; but the moſt remarkable are the following:

1. OPHRYS ANTHROPOPHORA, *man-ſhaped ophrys*, or *man-orchis*, hath a roundiſh bulbous root, crowned with 3 or 4 oblong leaves; upright thick ſtalks, riſing a foot and a half high, adorned with narrow leaves, and terminated with looſe ſpikes of greeniſh flowers, repreſenting the figure of a naked man; the lip of the nectarium linear tripartite, with the middle ſegment longeſt and bifid. There is a variety with browniſh flowers tinged with green.

2. OPHRYS INSECTIFERA, *the inſect orchis*, BEE-FLOWER, or GNAT-FLOWER, has two roundiſh bulbous roots, crowned with oblong leaves; erect leafy ſtalks, from 6 to 10 or 12 inches high, terminated by ſpikes of inſect-ſhaped greeniſh flowers, having the lip of the nectarium almoſt five-lobed. This wonderful ſpecies exhibits flowers in different varieties, that repreſent ſingular figures

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figures of flies, bees, and other inſects; and are of different colours in the varieties.

3. OPHRYS MONORCHIS, or *muſky ophrys*, hath a roundiſh bulbous root; crowned with three or four oblong leaves; an erect naked ſtalk, ſix inches high; terminated by a looſe ſpike of yellowiſh, muſky-ſcented flowers.

4. OPHRYS NIDUS AVIS, or *bird's-neſt*, hath a bulbous, fibrated, cluſtered root; upright, thick, ſucculent ſtalks, a foot high, ſheathed by the leaves, and terminated by looſe ſpikes of pale-brown-flowers; having the lip of the nectarium bifid.

5. OPHRYS OVATA, *oval-leaved ophrys*, or *common tway-blade*, hath a bulbous, fibrated root; crowned by two oval, broad, obtuſe, veined, oppoſite leaves; an erect, ſucculent green ſtalk, ſix or eight inches high, naked above, and terminated by a looſe ſpike of greeniſh flowers, having the lip of the nectarium bifid. The flowers of this ſpecies reſemble the figure of gnat.

6. OPHRYS SPIRALIS, *ſpiral orchis* or *triple ladies-treſſes*, hath bulbous, oblong, aggregated roots; crowned by a cluſter of oval, pointed, ribbed leaves; erect ſimple ſtalks, half a foot high; terminated by long ſpikes of white odoriferous flowers, hanging to one ſide, having the lip of the nectarium entire, and crenated.—All theſe ſpecies of ophrys flower in ſummer, at different times, in different ſorts, from May until July; and in moſt of the ſorts exhibit a ſingularly curious appearance. The plants are all perennial in root, which are of the bulbous fleſhy kind, from which the flower-ſtalks riſe annually in ſpring, and decay in autumn; at which period is the proper time for removing the roots from one place to another. They all grow wild in Britain, &c.; are reſidents of woods, bogs, marſhy grounds, ſterile paſtures, chalky ſoils, and the like places, where they flouriſh and diſplay their ſingular flowers in great abundance, from which places they are introduced into gardens for variety; and having procured ſome plants at the proper ſeaſon, and planted them in ſoils and ſituations ſomewhat ſimilar to that in which they naturally grow, the roots will abide for ſeveral years, and flower annually. As to their propagation, it may be tried by ſeed in a ſhady border, as ſoon as it is ripe; likewiſe by off-ſets from the root, though they multiply ſparingly in gardens: however, roots of ſome ſtanding may be examined at the proper ſeaſon, and any off-ſets ſeparated and planted in the proper places.

OPHTHALMIA. See MEDICINE, *Index*.

* OPHTHALMICK. *adj.* [*ophthalmique*, Fr. from ὀφθαλμὸς, Gr.] Relating to the eye.

OPHTHALMOSCOPY, *n. ſ.* a branch of phyſiognomy, which deduces the knowledge of a man's temper and manner from the appearance of his eyes.

* OPHTHALMY. *n. ſ.* [*opthalmie*, Fr. from ὀφθαλμὸς, Gr.] A diſeaſe of the eyes, being an inflammation in the coats, proceeding from arterious blood gotten out of the veſſels and collected into thoſe parts. *Dict.*—The uſe of cool applications, externally, is moſt eaſy to the eye; but after all, there will ſometimes enſue a troubleſome *opthalmy*. *Sharp's Surgery*.

OPI, a town of Naples in Abruzzo Citer.

(1.) * OPIATE. *adj.* Soporiferous; ſomniferous; narcotick; cauſing ſleep.—The particular ingredients of thoſe magical ointments, are *opiate* and ſoporiferous. *Bacon*.

The paſt'ral reed
Of Hermes, or his *opiate* rod. *Milt. Par. Loſt.*

—Lettuce, which has a milky juice, with an anodyne or *opiate* quality reſolvent of the bile, is proper for melancholy. *Arbuthnot on Aliments*.

(2.) * OPIATE. *n. ſ.* A medicine that cauſes ſleep.—They chooſe atheiſm as an *opiate* to ſtill thoſe frightening apprehenſions of hell, by inducing a dulneſs and lethargy of mind, rather than to make uſe of that native and ſalutary medicine, a hearty repentance. *Bentley*.

No ſameneſs of a prattling ſtream is thine,
Which, with one uniſon of murmur flows,
Opiate of inattention and repoſe. *Harte*.

(3.) OPIATES are medicines of a thicker conſiſtence than a ſyrup, prepared with opium ſcarcely fluid. They conſiſt of various ingredients, made up with honey or ſyrup; and are to be uſed for a long time either for purgative, alterative, or corroborative intentions. Opiate is alſo uſed for any medicine given to procure ſleep, whether in the form of electuaries, drops, or pills.

OPICI, the ancient people of Campania.

* OPIFICE. *n. ſ.* [*opificium*, Lat.] Workmanſhip; handywork. *Dict.*

* OPIFICER. *n. ſ.* [*opifex*. Latin. One that performs any work; artiſt. A word not received.—There is an infinite diſtance betwixt the poor mortal artiſt, and the almighty *opificer*. *Bentley's Sermons*.

OPILIUS, a Roman grammarian, who flouriſhed about A. A. C. 94. He wrote a book entitled *Libri Muſarum*.

* OPINABLE. *adj.* [*opinor*, Lat.] Which may be thought. *Dict.*

* OPINATION. *n. ſ.* [*opinor*, Lat.] Opinion; notion. *Dict.*

* OPINATOR. *n. ſ.* [*opinor*, Lat.] One who holds an opinion.—Conſider againſt what kind of *opinators* the reaſon above given is levelled. *Hale*.

* *To* OPINE. *v. n.* [*opinor*, Latin.] To think; to judge; to be of opinion.—

They'll *opine* they feel the pain
And blows they felt to day, again. *Hudibras*.

—In matters of mere ſpeculation, it is not material to the welfare of government, or themſelves, whether they *opine* right or wrong. *South*.—

But I, who think more highly of our kind,
Opine, that nature, as in duty bound,
Deep hid the ſhining miſchief under ground.
Pope.

* OPINIATIVE. *adj.* [from *opinion*.] 1. Stiff in a preconceived notion. 2. Imagined; not proved. It is difficult to find out truth, becauſe it is in ſuch inconſiderable proportions ſcattered in a maſs of *opiniative* uncertainties.

* OPINIATOR. *n. ſ.* [*opiniatre*, Fr.] One fond of his own notion; inflexible; adherent to his own opinion.—What will not *opiniators* and ſelf-believing men diſpute of and make doubt of? *Raleigh*.—Eſſex left Roberts governour; a man of a ſour and ſurly nature, a great *opiniator*, and one who muſt be overcome before he would believe that

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that he could be ſo. *Clarendon.*—Down was he caſt from all his greatneſs, and forced to end his days in a mean condition: as it is pity but all ſuch politic *opiniators* ſhould. *South.*

* OPINIATRE. *adj.* [Fr.] Obſtinate; ſtubborn.—Inſtead of an able man, you deſire to have him an inſignificant wrangler, *opiniatre* in diſcourſe and priding himſelf in contradicting others.

* OPINIATRETY. } *n. ſ.* [*opiniatreté*, French.]
* OPINIATRY. } Obſtinacy; inflexibility; determination of mind; ſtubbornneſs. This word though it has been tried in different forms, is not yet received, nor is it wanted.—Leſt popular *opiniatry* ſhould ariſe, we will deliver the chief opinions. *Brown.*—The one ſets the thoughts upon wit and falſe colours, and not upon truth; the other teaches fallacy, wrangling, and *opiniatry*. *Locke.*—The floating of other men's opinions in our brains, make us not one jot the more knowing, though they happen to be true: what in them was ſcience, is in us but *opiniatrety*. *Locke.*—I can paſs by *opiniatry*, and the buſy meddling of thoſe who thruſt themſelves into every thing. *Woodward.*—I was extremely concerned at his *opiniatrety* in leading me: but he ſhall not get rid ſo. *Pope.*

(1.) OPINION. *n. ſ.* [*opinion*, Fr. *opinio*, Latin.] 1. Perſuaſion of mind, without proof or certain knowledge.—*Opinion* is a light, vain, crude and imperfect thing, ſettled in the imagination, but never arriving at the underſtanding. *Ben. Jonſon.* *Opinion* is, when the aſſent of the underſtanding is ſo far gained by evidence of probability, that it rather inclines to one perſuaſion than to another, yet not altogether without a mixture of uncertainty or doubting. *Hale.*—Time wears out the fictions of *opinion*, and doth by degrees diſcover that fallacy of ungrounded paſſions. *Wilkins.*—

By their error we are taught,
That happineſs is but *opinion*. *Prior.*

2. Sentiments; judgment; notion.—Where no ſuch ſettled cuſtom hath made it law, there it hath force only according to the ſtrength of reaſon and circumſtances joined with it, or as it ſhews the *opinion* and judgment of them that made it. *Selden.*—Can they make it out againſt the common ſenſe and *opinion* of all mankind, that there is no ſuch thing as a future ſtate of miſery for ſuch as have lived ill here? *South.*—Friendſhip gives a man a peculiar right and claim to the good *opinion* of his friend. *South.*—We may allow this to be his *opinion* concerning heirs, that where there are divers children the eldeſt ſon has right to be heir. *Locke.*—Philoſophers are of *opinion*, that infinite ſpace is poſſeſſed by God's infinite omnipreſence. *Locke.*—A ſtory out of Boccalini ſufficiently ſhews us the *opinion* that judicious author entertained of the criticks. *Addiſon.* 3. Favourable judgment.—In actions of arms ſmall matters are of great moment, eſpecially when they ſerve to raiſe an *opinion* of commanders. *Hayward.*—Howſoever, I have no *opinion* of theſe things. *Bacon.*—If a woman had no *opinion* of her own perſon and dreſs, ſhe would never be angry at thoſe who are not of the ſame *opinion* with herſelf. *Law.*

(2.) OPINION, (§ 1, *def.* 1.) is that judgment which the mind forms of any propoſition for the truth or falſehood of which there is not ſufficient evidence to produce ſcience or abſolute belief. That three angles of a plane triangle are equal to two right angles, is not a matter of *opinion*, nor can it with propriety be called an object of the mathematician's *belief*: he does more than believe it; he *knows* it to be true. When two or three men, under no temptation to deceive, declare that they were witneſſes of an uncommon, though not preternatural event, their teſtimony is complete evidence, and produces abſolute *belief* in the minds of thoſe to whom it is given; but it does not produce *ſcience* like rigid demonſtration. The fact is not doubted, but thoſe who have it on report do not *know* it to be true, as they know the truth of propoſitions intuitively or demonſtrably certain. When one or two men relate a ſtory including many circumſtances to a third perſon, and another comes who poſitively contradicts it, either in whole or in part, he, to whom thoſe jarring teſtimonies are given, weighs all the circumſtances in his own mind, balances the one againſt the other, and lends an aſſent, more or leſs wavering, to that ſide on which the evidence appears to preponderate. This aſſent is his *opinion* reſpecting the facts of which he has received ſuch different accounts. Opinions are often formed of events not yet in being. Were an officer from the Britiſh fleet, now lying off the coaſt of France (Feb. 1804) to come into the room where we are writing, and tell us that the French fleet had paſſed by them in a thick fog, and were ſuppoſed by this time to have landed 100,000 troops on the coaſt of Kent, we ſhould abſolutely *believe* every fact which he had told us, upon the evidence of his teſtimony; but we could only be of *opinion* that his concluding ſuppoſitions were true. In forming opinions of this kind, upon which, in a great meaſure depends our ſucceſs in any purſuit, every circumſtance ſhould be carefully attended to, and our judgments guided by former experience. Truth is a thing of ſuch importance to man, that he ſhould always purſue the beſt methods for attaining it; and when the object eludes all his reſearches, he ſhould remedy the diſappointment, by attaching himſelf to that which has the ſtrongeſt reſemblance to it; and that which moſt reſembles truth is called *probability*, as the judgment which is formed of it is termed *opinion*. See PROBABILITY.

* *To* OPINION. *v. a.* [from the noun.] To opine; to think.—A word out of uſe, and unworthy of reviving.—The Stoicks *opinioned* the ſouls of wiſe men dwell about the moon, and thoſe of fools wandered about the earth. *Brown.*—That the ſoul and the angels are devoid of quantity and dimenſion, is generally *opinioned*. *Glanville.*

* OPINIONATIVE. *adj.* [from *opinion*.] Fond of preconceived notions; ſtubborn.—Striking at the root of pedantry and *opiniunative* aſſurance, would be no hindrance to the world's improvement. *Glanville.*—One would rather chuſe a reader, without art, than one ill inſtructed with learning, but *opinionative*, and without judgment. *Burnet.*

* OPINIONATIVELY. *adv.* [from *opinionative*.] Stubbornly.

* OPINIONATIVENESS. *n. ſ.* [from *opinionative*.] Obſtinacy.

* OPINIONIST. [*opinioniſte*, Fr. from *opinion*.] One

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One fond of his own notions.—Every conceited *opiniaſt* ſets up an infallible chair in his own brain. *Glanville.*

* OPIPAROUS. *adj.* [*opiparus*, Latin.] Sumptuous. *Diſt.*

OPIS, an ancient town on the Tigris, afterwards called ANTIOCH. *Zeno.*

OPITERGINI, an ancient people of Italy.

OPITERGUM, an ancient town of Italy, near Aquileia, on the Adriatic, the capital of the OPITERGINI: now called ODERZO. *Lucan*, iv. 416.

OPITIUS, or } Henry, a learned Lutheran di-
(1.) OPITS, } vine, born at Altenburg in Miſnia, in 1642. He was profeſſor of theology and of the oriental languages at Kiel, where he acquired great reputation by a variety of excellent works concerning oriental literature and Hebrew antiquities. He died in 1712.

(2.) OPITS, or OPITIUS, Martin, a celebrated German poet, born at Breſlaw in 1507. He acquired great fame by his Latin, and more by his German poems; and, retiring to Dantzic, wrote a hiſtory of the ancient Daci. He died of the plague in 1639.

* OPITULATION. *n. ſ.* [*opitulatio*, Latin.] An aiding; a helping. *Diſt.*

(1.) * OPIUM. *n. ſ.* A juice, partly of the reſinous, partly of the gummy kind. It is brought to us in flat cakes or maſſes very heavy and of a denſe texture, not perfectly dry: its colour is a dark browniſh yellow; its ſmell is of a dead faint kind; and its taſte very bitter and very acrid. It is brought from Natolia, Egypt, and the Eaſt Indies, produced from the white garden poppy; with which the fields of Aſia Minor are in many places ſown. When the heads grow to maturity, but are yet ſoft, green and full of juice, inciſions are made in them, and from every one of theſe a few drops flow of a milky juice, which ſoon hardens into a ſolid conſiſtence. The fineſt *opium* proceeds from the firſt inciſions. What we generally have is the mere crude juice, worked with water, or honey ſufficient to bring it into form. Externally applied it is emollient, relaxing and diſcutient, and greatly promotes ſuppuration. A moderate doſe of *opium* taken internally, is generally under a grain, yet cuſtom will make people bear a dram, but in that caſe nature is vitiated. Its firſt effect is the making the patient cheerful; it removes melancholy, and diſſipates the dread of danger; the Turks always take it when they are going to battle: it afterwards quiets the ſpirits, eaſes pain, and diſpoſes to ſleep. After the effect is over, the pain generally returns in a more violent manner; the ſpirits become lower than before, and the pulſe languid. An immoderate doſe of *opium* brings on drunkenneſs, cheerfulneſs, and loud laughter, at firſt, and, after many terrible ſymptoms, death itſelf. Thoſe who have accuſtomed themſelves to any immoderate uſe of *opium*, are apt to be faint, idle, and thoughtleſs; they loſe their appetite, and grow old before their time. *Hill.*—

Sleep hath forſook and giv'n me o'er
To death's benumbing *opium* as my only cure.
Milton.

—The colour and taſte of *opium* are, as well as its ſoporific or anodyne virtues, mere powers depending on its primary qualities, whereby it is fitted to produce different operations on different parts of our bodies. *Locke.*

(2.) OPIUM, in the materia medica, is an inſpiſſated juice, brought to us in cakes from 8 ounces to a pound weight. It eaſily receives an impreſſion from the finger. It is to be choſen moderately firm, and not too ſoft; its ſmell and taſte ſhould be very ſtrong, and care taken that there be no dirty or ſtony matter in it. Opium is the juice of the papaver album. See PAPAVER, N° 1. In Aſia, when the heads are near ripening, they wound them with an inſtrument that has 5 edges, which on being ſtuck into the head makes at once five long cuts in it; and from theſe wounds the opium flows, and is next day taken off by a perſon who goes round the field, and put up in a veſſel which he carries faſtened to his girdle; at the ſame time that his opium is collected, the oppoſite ſide of the poppy head is wounded, and the opium collected from it the next day. After they have collected the opium, they moiſten it with a ſmall quantity of water or honey, and work it a long time upon a flat, hard, and ſmooth board, with a thick and ſtrong inſtrument of the ſame wood, till it becomes of the conſiſtence of pitch; and then work it up with their hands, and form it into cakes or rolls for ſale. Opium at preſent is in great eſteem, and is one of the moſt valuable of all the ſimple medicines. In its effects on the animal ſyſtem, it is the moſt extraordinary ſubſtance in nature. Its firſt effects are like thoſe of a ſtrong, ſtimulating cordial, but are ſoon ſucceeded by univerſal languor or irreſiſtible propenſity to ſleep, attended with dreams of the moſt rapturous and enthuſiaſtic kind. After theſe contrary effects are over, which are generally terminated by a profuſe ſweat, the body becomes cold and torpid: the mind penſive and deſponding; the head is affected with ſtupor, and the ſtomach with ſickneſs and nauſea. Thoſe who take opium to excels experience langour and dejection of ſpirits common to ſuch as drink ſpirituous liquors in exceſs; to the bad effects of which it is ſimilar, ſince, like thoſe, they are not eaſily removed without a repetition of the doſe. By the indiſcriminate uſe of that preparation of opium called *Godfrey's Cordial*, many children are yearly cut off; for it is frequently given doſe after doſe, without moderation, by ignorant women and mercenary nurſes, to ſilence the cries of infants and lull them to ſleep, by which they are at laſt rendered ſtupid, inactive, and rickety. Opium is uſed as a luxury in the eaſt. Mr Groſe informs us, that moſt of the hard-labouring people at Surat, and eſpecially the porters, take great quantities of this drug, which, they pretend, enables them to work, and carry heavier burdens than they otherwiſe could do. Some of theſe, our author aſſures us, will take more than an ounce at a time without detriment. Many people in opulent circumſtances follow the ſame cuſtom, but with very different motives. Some uſe it merely for the ſake of the pleaſing delirium it occaſions; others for venereal purpoſes, as they can thus lengthen the amorous congreſs

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as much as they pleaſe, though they are certain to bring on an abſolute impotency and premature old age at laſt. For this purpoſe it is uſually taken in milk; and when they have a mind to check or put an end to its operation, they ſwallow a ſpoonful or two of lime juice, or any ſimilar acid. Beſides theſe effects of opium, it is ſaid by the Indians to have a very ſingular one, in bringing on a ſeeming heavineſs of the head and ſleepineſs of the eye, at the ſame time that it really produces great watchfulneſs. It is alſo conſidered as a great inſpirer of courage, or rather inſenſibility to danger; ſo that the commanders make no ſcruple of allowing large quantities of it to the ſoldiers, when they are going to battle or engaged in any hazardous enterprize. The beſt opium in the world is ſaid to come from Patna on the Ganges, where, at leaſt, the greateſt traffic of it is made, and whence it is exported all over India; though in ſome parts, eſpecially on the Malay coaſts, it is prohibited under pain of death on account of the madneſs, and murders conſequent upon that madneſs, which are occaſioned by it; notwithſtanding which ſevere prohibition, however, it is plentifully ſmuggled into all theſe countries.—The ſoil about the Ganges is accounted beſt for producing the ſtrongeſt kind of opium. Opium, if long kept upon the ſkin, takes off the hair, and always occaſions an itching in it; ſometimes it exulcerates it, and raiſes little bliſters, if applied to a tender part. Sometimes, on external application, it allays pain, and even occaſions ſleep; but it muſt by no means be applied to the head, eſpecially to the ſutures of the ſkull; for it has been known to have the moſt terrible effects in this application, and even to bring on death itſelf. It appears, too, from ſome curious experiments made by Dr Leigh, to act as the moſt powerful of all ſtyptics. Opium contains gum, reſin, eſſential oil, ſalt, and earthy matter; but its *narcotic* or ſomniferous power has been experimentally found to reſide in its *eſſential oil*. Agreeably to the deſcriptions given of the powers of opium by moſt medical authors, we have uſed the term, *narcotic*; but Dr Beddoes objects to it in the following words: "It is curious to ſee what pains medical writers have taken to imagine hypotheſes, either out of mere complaiſance to the term, *narcotic*, or becauſe opium is a drug in Chriſtendom, and wine an article of diet, rather than ſuffer themſelves to ſee that opium makes a man merry or drunk, then lays him aſleep, then afterwards cauſes him to awake with a head-ache, in the ſame manner as wine. One cannot compare Haller's clear and ſatisfactory parallel of wine and opium, publiſhed in 1769, (*El phyſiol.* 1 V. p. 610—11.) with Cullen's perplexed and hypothetical doctrine of opium, and his whole *ſedantia*, publiſhed in 1789, (*Mat. Med.* t. II. 227, *et ſeq.*) without a ſenſe of humiliation." *Obſ. on Catarrh.* 151. *note.* Nurſes and women who have the care of infants cannot be too ſtrongly cautioned againſt giving opiates to children, when reſtleſs, in order to make them ſleep. Mr P. Martin, ſurgeon, Dunning, aſſures us, that he has known the moſt fatal conſequences flow from giving large doſes of *diacodium* to infants, although the proportion of opium in that medicine is not very great.

OPLADEN, a town of Germany in Berg.

* OPLE TREE. *n. ſ.* [*opulus*, *ople*, and *tree*.] A ſort of tree. *Ainſworth.*

(1.) * OPOBALSAMUM. *n. ſ.* [Latin.] Balm of Gilead.

(2.) OPOBALSAMUM, or OPOBALSAM. } See AMYRIS, N° 3. Mr Bruce, the celebrated traveller, employs ſeveral pages of his Appendix in aſcertaining the antiquity and native ſoil of the balſam tree; after which he gives us the following account of the opobalſamum, or juice, flowing from it: "At firſt when it is received into the bottle or vaſe from the wound whence it iſſues, it is of a light yellow colour, apparently turbid, in which there is a whitiſh caſt, which I apprehend are the globules of air that pervade the whole of it in its firſt ſtate of fermentation; it then appears very light upon ſhaking. As it ſettles and cools it turns clear, and loſes that milkineſs which it firſt had when flowing from the tree into the bottle. It has then the colour of honey, and appears more fixed and heavy than at firſt. After being kept for years, it grows a much deeper yellow, and of the colour of gold. I have ſome of it, which I got from the cadi of Medina in 1768; it is now ſtill deeper in colour, full as much ſo as the yelloweſt honey. It is perfectly fluid, and has loſt very little either of its taſte, ſmell, or weight. The ſmell at firſt is violent and ſtrongly pungent, giving a ſenſation to the brain like that of volatile ſalts, when raſhly drawn up by an incautious perſon. This laſts in proportion to its freſhneſs; for being neglected, and the bottle uncorked, it quickly loſes this quality. In its pure and freſh ſtate it diſſolves eaſily in water. If dropped on a woollen cloth it will waſh out eaſily and leaves no ſtain. It is of an acrid, rough, pungent taſte; is uſed by the Arabs in all complaints of the ſtomach and bowels, is reckoned a powerful antiſeptic, and of uſe in preventing any infection of the plague. Theſe qualities it now enjoys, in all probability, in common with the various balſams we have received from the new world, ſuch as the balſam of Tolu, of Peru, and the reſt; but it is always uſed, and in particular eſteemed by the ladies, as a coſmetic: as ſuch it has kept up its reputation in the eaſt to this very day. The manner of applying it is this: You firſt go into the tepid bath till the pores are ſufficiently opened; you then anoint yourſelf with a ſmall quantity, and as much as the veſſels will abſorb. Never-fading youth and beauty are ſaid to be the conſequences of this. The purchaſe is eaſy enough. I do not hear that it ever has been thought reſtorative after the loſs of either."

OPOCALPASUM, } or APOCALPASUM; a
OPOCARBASUM, } gummy reſinous ſubſtance, which has a ſtrong reſemblance to the beſt liquid myrrh, and which in the time of Galen they mixed with myrrh. It was difficult, according to this writer, to diſtinguiſh the one from the other unleſs by their effects. It was a poiſonous juice, which frequently produced lethargy and ſudden ſtrangling. He has known ſeveral perſons who died in conſequence of inadvertently taking myrrh in

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in which there was a mixture of opocarbasum. Perhaps it was only a juice composed of a solution of euphorbia, in which drops of opium were macerated. Poisons of this kind have from time immemorial been as common in Africa as that of arrows poisoned with the juice of the mancanilla is in America. Mr Bruce, the Abyssinian traveller, says that he saw in a Mahometan village a large tree, which was so covered with knots and balls of gum on the upper part of the trunk and on the large branches, that it had a monstrous appearance. From some inquiries which he made on this subject, he found that certain merchants had brought this tree from the country of the good myrrh, which is TROGLODYTICA (for it does not grow in Arabia), and that they had planted it for the sake of its gum; with which these Mussulmen starch the blue stuffs of Surat, which they receive damaged from Mocha, to barter them with the Galla and the Abyssinians. This tree is called SASSA; and Mr. Bruce declares that he has seen it completely covered with beautiful crimson flowers of a very uncommon structure. He adds, that the sassa gum is well calculated, both on account of its abundance and its colour, to augment the quantity of myrrh; and he is the more confirmed in his opinion, because every thing leads him to think that no other gummiferous tree, possessed of the same properties with the sassa, grows in the myrrh country. In short, he thinks it almost beyond a doubt that the gum of the sassa tree is the opocalpasum; and he supposes Galen mistaken in ascribing any fatal property to this drug; and that many were believed to be killed by it, whose death might, perhaps, with more justice, have been placed to the account of the physician. Mr Bruce adds, that though the Troglodites of the myrrh country are at present more ignorant than formerly, they are nevertheless well acquainted with the properties of their simples: and that while they wish to increase the sale of their commodities, they would never mix with them a poison which must necessarily diminish it. In this we accede to his opinion; but we must differ from him when he says, that no gum or resin with which we are acquainted is a mortal poison; the savages of both hemispheres are acquainted with but too many of them. The gum of the sassa tree, according to Mr Bruce, is of a close smooth grain, of a brown dull colour, but sometimes very transparent; it swells and becomes white in water; it has a great resemblance in its properties to gum tragacanth, and may be eaten with all safety. From all this it appears that the opocalpasum mentioned by Pliny is not the sassa gum described by Mr Bruce.

OPOCZNO, a town of Poland, in the palatinate of Sandomirz; 44 miles N. of Malogocz.

OPODELDOC, a quack medicine, compounded of camphor, soap and spirits, similar to the medical prescription, called by regular practitioners *the Saponaceous Balsam*; only the opodeldoc has a larger proportion of soap. It is prescribed for rheumatisms, chilblains, and all kinds of sprains.

OPOGKA, a town of Russia, in Pskov.

(1.) * OPOPONAX, *n. s.* [Latin.] A gum resin in small loose granules, and sometimes in large masses, of a strong disagreeable smell, and an acrid and extremely bitter taste; brought to us from the East, and known to the Greeks; but we are entirely ignorant of the plant which produces this drug. *Hill.*

(2.) OPOPONAX is of a tolerable firm texture, sometimes in masses formed of a number of small granules connected by a quantity of matter of the same kind; but these are usually loaded with extraneous matter, and are greatly inferior to the pure loose kind. The drops or granules of the fine opoponax are on the outside of a brownish red colour, and of a dusky yellowish or whitish colour within: they are of a somewhat unctuous appearance, smooth on the surface: and are to be chosen in clear pieces, of a strong smell and acrid taste. This gummy substance is obtained from the roots of an umbelliferous plant, which grows spontaneously in warm countries, and bears the cold of this. The juice is brought from Turkey and the East Indies; and it is an attenuating and aperient medicine. Boerhaave frequently employed it, along with ammoniacum and galbanum, in hypochondriacal disorders, obstructions of the abdominal viscera, and suppressions of the menstrual evacuations, from a sluggishness of mucous humours, and a want of due elasticity of the solids: with these intentions it is an useful ingredient in the pilulæ gummosæ and compound powder of myrrh of the London pharmacopœia, but it is not employed in any composition of the Edinburgh. It may be given by itself in the dose of a scruple, or half a dram: a whole dram proves in many constitutions gently purgative: also dispels flatulencies; is good in asthmas, inveterate coughs, and in disorders of the head and nerves. See PASTINACA, N° 1.

OPORINUS, John, a celebrated German printer, born at Basil, in 1507. His father was a painter, and being a man of education taught him Latin himself, in which he improved himself farther when he studied Greek at Strasburg. He afterwards kept a school, transcribed MSS. and became a corrector of the press. He married an old woman, the widow of one Xelotect, a canon of Lucerne, who, though rich, made him unhappy, and when relieved by her death, he was as poor as ever. He married however three times afterwards. He studied physic, and was for two years secretary to the famous Paracelsus. He at last commenced printer, and published many valuable works, from old MSS. with notes; as well as some original pieces of his own. He died in 1568, aged 61.

OPORTO, or PORTO: a rich handsome, and considerable town of Portugal, in the province of Entre Douro e Minho, with a bishop's see. It is a place of great importance, and by nature almost impregnable. It is noted for its strong wines; and a large quantity is thence exported to Britain, whence all red wines that come from Spain or Portugal are called *port wines*. It is seated on the declivity of a mountain near the Duero, which forms an excellent harbour. Lon. 8. 1. W. Lat. 41. 0. N.

OPOSSUM, in zoology. See DIDELPHIS.

OPOTSCHKA, a town of Bohemia, in Konigingratz 15 miles N. of Konigingratz.

OPPA, a river of Silesia, which runs into the Oder, 14 miles SE. of Troppau.

OPPAU. See TROPPAU.

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OPPEAN, an elegant town of Italy, in the dep. of Mincio, and diſtrict, late duchy, of Verona, ſeated on the Buſſeto.

OPPEDE, a town of France, in the dep. of Vaucluſe, and ci-devant county of Venaiſſin, 6 miles E. of Cavaillon.

OPPELEN, or } a principality of Silefia, bound-
(1.) OPPELN, } ed on the N. by thoſe of Breſlau, Oels, and Brieg; N. and E. by Poland; S. by the duchies of Ratibor, Jagerndorf and Troppau; and W. by Neiſſe and Brieg. The ſoil is ſandy, but abounds with foreſts. It contains 27 towns, and ſeveral villages.

(2.) OPPELN, or OPELEN, the capital of the above duchy, and a biſhop's ſee; with a caſtle, a fine church, a college, 2 convents and an hoſpital. The chief tribunal of juſtice and firſt conſiſtory of Silefia were ſettled in it, in 1742. It is ſeated on the Oder, 26 miles NE. of Neiſſe, 35 SE. of Breſlaw, and 40 N. of Troppau. Lon. 17. 50. E. Lat. 50. 41. N.

OPPENAU, a town of Germany, in the circle of the Upper Rhine, and late dioceſe of Straſburg, on the E. ſide of the Rhine, 13 miles E. of Straſburg, and 8 ENE. of OFFENBURG. It appears to be among the indemnities granted in Auguſt 1802, to the Margrave of Baden.

(1.) OPPENHEIM, a ci-devant bailiewic of Germany, in the Lower Palatinate of the Rhine, now included in the French empire, and department of Mont Tonnere.

(2.) OPPENHEIM, a town of France, in the dep. of Mont Tonnere; late capital of the above bailiewic; ſeated on the declivity of a hill near the Rhine. Its walls were demoliſhed by the French in 1688—9. Calviniſts, Lutherans and Catholics have each a church in it. It lies 8 miles S. of Mentz, and 12 N. of Worms. Lon. 8. 20. E. Lat. 49. 58. N.

OPPENITZ, a town of Auſtria, 4 miles S. of Bavarian Waidhoven.

OPPIA LEX, the } in Roman antiquity, a law
OPPIAN LAW, } introduced by C. Oppius, the tribune, A. U. C. 540. It enacted, that no woman ſhould wear above half an ounce of gold, have party coloured garments, or be carried in any city or town, or to any place within a mile, unleſs to celebrate ſome ſacred feſtival. It was made while Hannibal was in Italy, and Rome was in great diſtreſs, but created much diſcontent. The Roman ladies, 18 years after, petitioned for its repeal. Cato oppoſed the repeal, and vented much cynical ſatire againſt the ladies for appearing in public to ſolicit votes. The tribune Valerius anſwered the ſage's objections, and carried the repeal, with the unanimous conſent of all the Comitia, Cato alone excepted. *Liv.* xxxiii.

OPPIANUS, a poet and grammarian of Anazarba in Cilicia, in the 2d century. He compoſed a poem *on Hunting*, and another *on fiſhing*, for which Antoninus Caracalla gave him as many golden crowns as there were verſes in his poems; they were hence called *Oppian's golden verſes*. He died in the 30th year of his age.

* OPPIDAN. *n. ſ.* [*oppidanus*, Lat.] A townſman; an inhabitant of a town.

OPPIDO, an epiſcopal town of Naples, in Calabria Ultra, at the foot of the Appenines, 25 miles NE. of Reggio. It was deſtroyed by an earthquake in 1783. Lon. 16. 21. E. Lat. 38. 19. N.

OPPIETO, a town of France, in the department and iſland of Corſica; 8 miles NNE. of Ajazzo.

* *To* OPPIGNERATE. *v. a.* [*oppignero*, Latin.] To pledge; to pawn. Not in uſe.—The duke of Guiſe Henry was the greateſt uſurer in France; he had ſold and *oppignerated* all his patrimony. *Bacon.*—Ferdinando merchanded with France, for the reſtoring Rouſſillon and Perpignan, *oppignerated* to them. *Bacon.*

* *To* OPPILATE. *v. a.* [*oppilo*, Latin; *oppiler*, Fr.] To heap up obſtruction.

(1.) * OPPILATION. *n. ſ.* [*oppilation*, French; from *oppilate*.] Obſtruction; matter heaped together.—The ingredients preſcribed in their ſubſtance actuate the ſpirits, reclude *oppilations*, and mundify the blood. *Harvey.*

(2.) OPPILATION, in medicine, is the act of obſtructing or ſtopping up the paſſage of the body, by redundant or peccant humours. It is chiefly uſed for obſtructions in the lower belly.

* OPPILATIVE. *adj.* [*oppilative*, Fr.] Obſtructive.

OPPIUS, Caius, a Roman biographer, and a friend of Julius Cæſar, who wrote the lives of Scipio Africanus and of Pompey the Great. But in the latter he is accuſed of having paid little regard to facts, his chief object being to defame Pompey, and extol his patron Cæſar. *Tacit. An.* 12. *Suet. Cæſ.* 53.

* OPPLETED. *adj.* [*oppletus*, Latin.] Filled; crowded.

(1.) * OPPONENT. *n. ſ.* [*opponens*, Lat.] Oppoſite; adverſe.—

It was *opponent* to our ſearch ordain'd,
That joy, ſtill ſought, ſhould never be attain'd.
Prior.

(2.) * OPPONENT. *n. ſ.* *opponens*, Lat.] 1. Antagoniſt; adverſary. 2. One who begins the diſpute by raiſing objections to a tenet, correlative to the defendant or reſpondent.—Ye are not to claim in any conference other than the plaintiff's or *opponent's* part. *Hooker.*—How becomingly does Philopolis exerciſe his office, and ſeaſonably commit the *opponent* with the reſpondent, like a long practiſed moderator. *More.*

* OPPORTUNE. *adj.* [*opportune*, Fr. *opportunus*, Lat.] Seaſonable; convenient; fit; timely; well-timed; proper.—There was nothing to be added to this great king's felicity, being at the top of all wordly bliſs, and the perpetual conſtancy of his proſperous ſucceſſes, but an *opportune* death to withdraw him from any future blow of fortune. *Bacon.*—

With neighb'ring arms
And *opportune* excurſion, we may chance
Re-enter heav'n. *Milton.*

Conſider'd every creature, which of all
Moſt *opportune* might ſerve his wiles. *Milton.*

* OPPORTUNELY. *adv.* [from *opportune*.] Seaſonably; conveniently; with opportunity, either of time or place.—He was reſolved to chuſe a war rather than to have Bretagne carried by France, being ſituate ſo *opportunely* to annoy England. *Bacon.*—I am therefore *opportunely* induced to

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to say somewhat. *Wotton.*—The experiment does *opportunely* supply the deficiency. *Boyle.*

* OPPORTUNITY. *n. f.* [*opportunité*, French; *opportunitas*, Latin.] Fit time; fit place; time; convenience; suitableness of circumstances to any end.—A wise man will make more *opportunities* than he finds. *Bacon.*—

Opportunity, like a sudden gust,
Hath swell'd my calmer thoughts into a tempest.
Accursed *opportunity!* *Denham.*

Yet length still loses *opportunities*. *Denham.*—I had an *opportunity* to see the clouds descend. *Brown.*—Neglect no *opportunity* of doing good. *Atterbury.*—All poets have taken an *opportunity* to give long descriptions of the night. *Broome.*

(1.) * *To* OPPOSE. *v. a.* [*opposer*, Fr. *oppono*, Lat.] 1. To act against; to be adverse; to hinder; to resist.—

My desire
All continent impediments would o'erbear,
That did *oppose* my will. *Shak.*

2. To put in opposition; to offer as an antagonist or rival.—If all men are not naturally equal, I am sure all slaves are; and then I may, without presumption, *oppose* my single opinion to his. *Locke.*

3. To place as an obstacle.—

Out of his envy's reach, I do *oppose*
My patience to his fury. *Shak.*

I thro' the seas pursu'd their exil'd race,
Engag'd the heav'ns, *oppos'd* the stormy main.
Dryden.

4. To place in front; to place over against.—

Her grace sat down
In a rich chair of state; *opposing* freely
The beauty of her person to the people. *Shak.*

(2.) * *To* OPPOSE. *v. n.* 1. To act adversely.

A servant, thrilled with remorse,
Oppos'd against the act, bending his sword
To his great master. *Shak.*

—He practised to dispatch such of the nobility as were like to *oppose* against his mischievous drift. *Hayward.* 2. To object in a disputation; to have the part of raising difficulties against a tenet supposed to be right.

* OPPOSELESS. *adj.* [from *oppose*.] Irresistible; not to be opposed.—

I could bear it longer, and not fall
To quarrel with your great *opposeless* wills. *Shak.*

* OPPOSER. *n. f.* [from *oppose*.] One that opposes; antagonist; enemy; rival.—

Now the fair goddess Fortune
Fall deep in love with thee, and her great charms
Misguide thy *opposers* swords. *Shak.*

—Brave wits that have made essays worthy of immortality; yet by reason of envious and more popular *opposers*, have submitted to fate, and are almost lost in oblivion. *Glanville.*—I do not see how the ministers could have continued in their stations, if their *opposers* had agreed about the methods by which they should be ruined. *Swift.*—

A bold *opposer* of divine belief. *Blackmore.*

(1.) * OPPOSITE, *adj.* [*opposite*, Fr. *oppositus*, Lat.] 1. Placed in front; facing each other.—

To th' other five,
Their planetary motions and aspects,
In sextile, square, trine, and *opposite*,
Of noxious efficacy. *Milton.*

2. Adverse; repugnant.—Nothing of a foreign nature, like the trifling novels, by which the reader is misled into another sort of pleasure, *opposite* to that which is designed in an epic poem. *Dryden.*—This is a prospect very uneasy to the lusts and passions, and *opposite* to the strongest desires of flesh and blood. *Rogers.* 3. Contrary.—Religion begins with repentance and conversion, the two *opposite* terms of which are God and sin. *Tillotson.*—Particles of speech have divers, and sometimes almost *opposite* significations. *Locke.*

(2.) * OPPOSITE. *n. f.* Adversary; opponent; antagonist; enemy.—To the best and wisest, while they live, the world is continually a froward *opposite*, a curious observer of their defects and imperfections; their virtues it afterwards as much admireth. *Hooker.*—He is the most skilful, bloody, and fatal *opposite*, that you could have found in Illyria. *Shak.*

The knight, whom fate or happy chance
Shall grace his arms so far in equal fight,
From out the bars to force his *opposite*,
The prize of valour and of love shall gain.
Dryden.

* OPPOSITELY. *adv.* [from *opposite*.] 1. In such a situation as to face each other.—The lesser pair are joined edge to edge, but not *oppositely* with their points downward, but upward. *Grew.* 2. Adversely.—

Winds from all quarters *oppositely* blow. *Maj.*

* OPPOSITENESS. *n. f.* [from *opposite*.] The state of being opposite.

(1.) * OPPOSITION. *n. f.* [*opposition*, Fr. *oppositio*, Lat.] 1. Situation so as to front something opposed; standing over against. 2. Hostile resistance.—

He found no *opposition*
From what he look'd for should oppose. *Shak.*
Virtue breaks thro' *opposition*,
And all temptation can remove. *Milton.*

—He took Anchises on his shoulders, and bore him safe through the rage of the fire, and the *opposition* of his enemies. *Dryden.* 3. Contrariety of affection.—They, who never tried the experiment of a holy life, measure the laws of God not by their intrinsical goodness, but by the reluctancy and *opposition* which they find in their own hearts. *Tillotson.* 4. Contrariety of interest; contrariety of measures.—When the church is taken for the persons making profession of the christian faith, the catholic is often added in *opposition* to heretics and schismatics. *Pearson.* 5. Contrariety of meaning; diversity of meaning.—The parts of every true *opposition* do always both concern the same subject, and have reference to the same thing. *Hooker.*—Exclusive terms are always to be understood in *opposition* only to what they are opposed to. *Waterland.* 6. Inconsistency.—Reason can never permit the mind to reject a greater evidence, to embrace what is less evident, nor allow it to entertain probability in *opposition* to knowledge and certainty. *Locke.*

(2.) OPPOSITION, in British politics, is collectively used for the minority in parliament, or that body of members in both houses, who *oppose* the measures of ministry. That such an opposition is useful, and even *necessary* in such a free constitution as the British, under a limited monarch, to

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prevent miniſters from encroaching on the liberties of the people, will be readily granted; but when the ſame individuals violently oppoſe meaſures *when out of place*, which they themſelves zealouſly ſupported *when in power*, they degrade the character of oppoſition, and render themſelves and their cauſe contemptible.

* *To* OPPRESS. *v. a.* [*oppreſſus*, Lat.] 1. To cruſh by hardſhip or unreaſonable ſeverity.—Iſrael and Judah were *oppreſſed* together. *Jer.*—

Alas! a mortal moſt *oppreſt* of thoſe
Whom fate has loaded with a weight of woes. *Pope.*

2. To overpower; to ſubdue.—

Nature, being *oppreſt*, commands the mind
To ſuffer with the body. *Shak.*

The ſun, *oppreſs'd*, is plung'd in thickeſt gloom. *Thomſon.*

* OPPRESSION. *n. ſ.* [*oppreſſion*, Fr. from *oppreſs.*] 1. The act of oppreſſing; cruelty; ſeverity.—If thou ſeeſt the *oppreſſions* of the poor, marvel not at the matter, for he that is higher than the higheſt regardeth. *Eccleſ.* 2. The ſtate of being oppreſſed; miſery.—

Need and *oppreſſion* ſtare within thine eyes. *Shak.*

Cæſar himſelf has work, and our *oppreſſion*
Exceeds what we expected. *Shak.*

3. Hardſhip; calamity.—When we ſee any under particular *oppreſſion*, we ſhould look upon it as the common lot of human nature. *Addiſon.* 4. Dullneſs of ſpirits; laſſitude of body.—Drowſineſs, *oppreſſion*, heavineſs, and laſſitude, are ſigns of a too plentiful meal. *Arbuthnot.*

* OPPRESSIVE. *adj.* [from *oppreſs.*] 1. Cruel; inhuman; unjuſtly exactious or ſevere. 2. Heavy; overwhelming.—

Help me to ſupport that feeble frame,
That nodding totters with *oppreſſive* woe,
And ſinks beneath its load. *Rowe.*

To eaſe the ſoul of one *oppreſſive* weight,
This quits an empire that embroils a ſtate. *Pope.*

* OPPRESSOR. *n. ſ.* [*oppreſſeur*, Fr. from *oppreſs.*] One who haraſſes others with unreaſonable or unjuſt ſeverity.—

I from *oppreſſors* did the poor defend. *Sandys.*

The cries of orphans, and th' *oppreſſor's* rage,
Had reach'd the ſtars. *Dryden.*

—Power when employed to relieve the oppreſſed, and to puniſh the *oppreſſor*, becomes a great bleſſing. *Swift.*

* OPPROBRIOUS. *adj.* [from *opprobrium*, Lat.] 1. Reproachful; diſgraceful; cauſing infamy; ſcurrilous.—Himſelf pronounceth them bleſſed, that ſhould for his name's ſake be ſubject to all kinds of ignominy and *opprobrious* malediction. *Hooker.*—They ſee themſelves unjuſtly aſperſed, and vindicate themſelves in terms no leſs *opprobrious* than thoſe by which they are attacked. *Addiſon.* 2. Blaſted with infamy.—

I will not here defile
My unſtain'd verſe with his *opprobrious* name. *Daniel.*

Solomon he led by fraud to build
His temple right againſt the temple of God,
On the *opprobrious* hill. *Milton.*

* OPPROBRIOUSLY. *adv.* [from *opprobrious.*] Reproachfully; ſcurrilouſly.—

Think you, this little prating York
Was not incenſed by his ſubtle mother,
To taunt and ſcorn you thus *opprobriouſly*? *Shak.*

* OPPROBRIOUSNESS. *n. ſ.* [from *opprobrious.*] Reproachfulneſs; ſcurrility.

OPPS, a town of Pennſylvania, in Northampton county; 6 miles SE. of Bethlehem.

* *To* OPPUGN. *v. a.* [*oppugno*, Lat.] To oppoſe; to attack; to reſiſt.—Ye be by no neceſſity bound to *oppugn* them. *Hooker.*—They ſaid the manner of their impeachment, they could not but conceive, did *oppugn* the rights of parliament. *Clarendon.*—

Nothing can *oppugn* his love. *Hudibras.*

—The ingredients reclude oppilations, mundify the blood, and *oppugn* putrefaction. *Harvey.*

* OPPUGNANCY. *n. ſ.* [from *oppugn.*] Oppoſition.—

Hark what diſcord follows, each thing meets
In mere *oppugnancy*.

* OPPUGNER. *n. ſ.* [from *oppugn.* One who oppoſes or attacks.—The modern and degenerate Jews be, upon the ſcore of being the great patrons of men's free will, not cauſeleſsly eſteemed the great *oppugners* of God's free grace. *Boyle.*

OPPURG, a town of Upper Saxony, in Neuſtadt; 4 miles WSW. of Neuſtadt, and 9 W. of Auma.

OPS, in mythology, the daughter of Cœlus and Terra, the ſiſter and wife of Saturn, and mother of Jupiter, Neptune, and Pluto, &c. She is alſo called CYBELE, RHEA, BONA DEA, MAGNA MATER, TELLUS, THYA, &c. (See theſe articles.) Lempriere confounds her with *Juno*, *Proſerpina*, and even *Minerva*; but the mythology of the ancient Greeks and Romans is a ſufficient maſs of confuſion and inconſiſtency, without confounding the mother with her daughters and grand-daughters. Her feſtivals were the OPALIA.

OPSA, a town of Lithuania, in Wilna.

OPSAL, a town of Norway, in Aggerhuys.

* OPSIMATHY. *n. ſ.* [ὀψιμαθία.] Late education; late erudition.

OPSIOKOVA, a town of Ruſſia, in Novogorod, on the Tchagoda; 80 miles NNE of Novogorod.

OPSO, a town of Maritime Auſtria, in Iſtria; 7 miles ENE, of Capo d'Iſtria.

* OPSONATION. *n. ſ.* [*opſonatio*, Lat.] Catering; a buying of proviſions. *Dict.*

OPSOPÆUS. See OBSOPÆUS, N° 1 and 2.

* OPTABLE. *adj.* [*optabilis*, Lat.] Deſirable; to be wiſhed.

(1.) * OPTATIVE. *adj.* [*optativus*, Lat.] Expreſſive of deſire. [In grammar.] The verb undergoes in Greek a different formation to ſignify wiſhing, which is called the *optative* mood. *Clarke.*

(2.) *The* OPTATIVE MOOD, in the Greek grammar, is that which ſerves to expreſs an ardent deſire or wiſh for ſomething. In moſt languages, except the Greek, the optative is only expreſſed by prefixing to the ſubjunctive an adverb of wiſhing; as *utinam*, in Latin; *plut à Dieu*, in French; and *would to God*, in Engliſh.

OPTATUS, Bp. of Melevia, a town of Numidia, in Africa, flouriſhed in the 4th century, under

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der Valentinian and Valens. He wrote a book *on the Schism of the Donatists*, about A. D. 370, against Parmenian, Bp. of that sect, which was published by Du Pin at Paris, in fol. 1700. He also wrote *The Sacred Geography of Africa*. He died A. D. 384.

* OPTICAL. *adj.* [οπτικος.] Relating to the science of opticks.—It seems not agreeable to what anatomists and *optical* writers deliver, touching the relation of the two eyes to each other. *Boyle.*

(1.) OPTIC ANGLE, the angle which the optic axes of both eyes make with one another, as they tend to meet at some distance before the eyes.

(2.) OPTIC AXIS, the axis of the eye, or a line going through the middle of the pupil and the centre of the eye.

* OPTICIAN. *n. s.* [from *optick*.] One skilled in opticks.

(1.) * OPTICK. *adj.* [οπτικος; *optique*, Fr.] 1. Visual; producing vision; subservient to vision.—May not the harmony and discord of colours arise from the proportions of the vibrations, propagated through the fibres of the *optick* nerves into the brain, as the harmony and discord of sounds arise from the proportions of the vibrations of the air? *Newton's Opticks.* 2. Relating to the science of vision.—Where our master handleth the contractions of pillars, we have an *optick* rule, that the higher they are, the less should be always their diminution aloft, because the eye itself doth contract all objects, according to the distance. *Wotton.*

(2.) * OPTICK. *n. s.* An instrument of sight; an organ of sight.—Can any thing escape the perspicacity of eyes which were before light, and in whose *opticks* there is no opacity? *Brown.*—

Our corporeal eyes we find
Dazzle the *opticks* of our mind. *Denham.*
Quickly cold indiff'rence will ensue,
When you love's joys through honour's *optick* view. *Prior.*
Say what the use, were finer *opticks* given
T' inspect a mite, not comprehend the heaven? *Pope.*

OPTICS.

DEFINITIONS.

1. OPTICS is defined by Dr Johnson as follows:

2. * OPTICKS. *n. s.* [οπτικη.] The science of the nature and laws of vision.—No spherical body, of what bigness soever, illuminates the whole sphere of another, although it illuminate something more than half of a lesser, according unto the doctrine of *opticks*. *Brown's Vulgar Errours.*—Those who desire satisfaction must go to the admirable treatise of *opticks* by Sir Isaac Newton. *Cheyne.*

3. OPTICS is by others more accurately defined, That science which treats of the element of light, and the various phenomena of vision.

HISTORY OF OPTICS.

SECT. I. DISCOVERIES *concerning* LIGHT.

4. The element of light has occupied much of the attention of thinking men ever since the phenomena of nature have been objects of rational investigation. The discoveries that have from time to time been made concerning it, are so fully inserted under the article LIGHT, that there is little occasion for any addition here. The nature of that subtile element is indeed very little known as yet, notwithstanding all the endeavours of philosophers; and whatever side is taken with regard to it, whether we suppose it to consist of an infinity of small particles propagated by a repulsive power from the luminous body, or whether we suppose it to consist in the vibrations of a subtile fluid, there are prodigious difficulties, almost, if not totally insuperable, which will attend the explanation of its phenomena. See CHEMISTRY, *Index.* In many parts of this work the identity of light and of the electric fluid is asserted: this, however, doth not in the least interfere with the phenomena of optics; all of which are guided by the same invariable laws, whether we suppose light to be a vibration of that fluid, or any thing else. We shall therefore proceed to

SECT. II. DISCOVERIES *concerning the* REFRACTION *of* LIGHT.

5. The ancients, though they made very few optical experiments, nevertheless knew, that when light passed through mediums of different densities, it did not move forward in a straight line, but was bent, or *refracted*, out of its course. This was probably suggested to them by the appearance of a straight stick partly immersed in water; and we find many questions concerning this and other optical appearances in Aristotle; to which, however, his answers are insignificant. Archimedes is said to have written a treatise concerning the appearance of a ring or circle under water, and therefore could not have been ignorant of the common phenomena of refraction. But the ancients were not only acquainted with these more ordinary appearances of refraction, but knew also the production of colours by refracted light. SENECA says, that if the light of the sun shines through an angular piece of glass, it will show all the colours of the rainbow. These colours, however, he says, are false, such as are seen in a pigeon's neck when it changes its position; and of the same nature, he says, is a speculum, which, without having any colour of its own, assumes that of any other body.

6. It appears also, that the ancients were not unacquainted with the magnifying power of glass globes filled with water, though they do not seem to have known any thing of the reason of this power; and the ancient engravers are supposed to have made use of a glass globe filled with water to magnify their figures, and thereby to work to more advantage. That the power of transparent bodies of a spherical form in magnifying or burning was not wholly unknown to the ancients, is further probable from certain gems preserved in the cabinets

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nets of the curious, which are ſuppoſed to have belonged to the Druids. They are made of rock cryſtal, of various forms, amongſt which are found ſome that are lenticular and others that are ſpherical: and though they are not ſufficiently wrought, to perform their office as well as they might have done, if they had been more judiciouſly executed, yet it is hardly poſſible that their effect, in magnifying at leaſt, could have eſcaped the notice of thoſe who had often occaſion to handle them; if, indeed, in the ſpherical or lenticular form, they were not ſolely intended for the purpoſes of burning. One of theſe, of the ſpherical kind, of about an inch and an half diameter, is preſerved among the foſſils given to the univerſity of Cambridge by Dr Woodward.

7. The firſt treatiſe of any note, written on optics, was by the celebrated aſtronomer Claudius Ptolomæus, who lived about the middle of the 2d century. The treatiſe is loſt; but from the accounts of others we find that he treated of aſtronomical refractions. Though refraction in general had been obſerved very early, it is poſſible that it might not have occurred to any philoſopher much before his time, that the light of the ſun, moon, and ſtars, muſt undergo a ſimilar refraction, in conſequence of falling obliquely upon the groſs atmoſphere that ſurrounds the earth; and that they muſt thus be turned out of their rectilinear courſe, ſo as to cauſe thoſe luminaries to appear higher in the heavens than they would otherwiſe do. The firſt aſtronomers were not aware that the intervals between ſtars appear leſs near the horizon than near the meridian; and, on this account, they muſt have been much embarraſſed in their obſervations. But it is evident that Ptolemy was aware of this circumſtance, by the caution that he gives to allow ſomething for it, upon every recourſe to ancient obſervations.

8. This philoſopher alſo advances a very ſenſible hypotheſis to account for the remarkably greater apparent ſize of the ſun and moon when ſeen near the horizon. The mind, he ſays, judges of the ſize of objects by means of a preconceived idea of their diſtance from us; and this diſtance is fancied to be greater when a number of objects are interpoſed between the eye and the body we are viewing; which is the caſe when we ſee the heavenly bodies near the horizon. In his *Almageſt*, however, he aſcribes this appearance to a refraction of the rays by vapours, which actually enlarge the angle under which the luminaries appear; juſt as the angle is enlarged by which an object is ſeen from under water.

9. In the 12th century, the nature of refraction was largely conſidered by Alhazen, an Arabian writer; inſomuch that, having made experiments upon it, at the common ſurface between air and water, air and glaſs, water and glaſs or cryſtal; and being prepoſſeſſed with the ancient opinion of cryſtalline orbs in the regions above the atmoſphere, he even ſuſpected a refraction there alſo, and fancied he could prove it by aſtronomical obſervations. This author deduces from hence ſeveral properties of atmoſpherical refraction; as that it increaſes the altitudes of all objects in the heavens; and he firſt advanced, that the ſtars are ſometimes ſeen above the horizon, by means of refraction, when they are really below it. This obſervation was confirmed by Vitellio, B. Waltherus, and eſpecially by the excellent obſervations of Tycho Brahe. Alhazen obſerved, that refraction contracts the vertical diameters and diſtances of the heavenly bodies, and that it is the cauſe of the twinkling of the ſtars. But we do not find that either he, or his follower Vitellio, knew any of its juſt quantity. Indeed it is too ſmall to be determined, except by very accurate inſtruments; and therefore we hear little more of it till about 1500, when great attention was paid to it by Bernard Walther, Mæſtlin, and others, but chiefly by Tycho Brahe.

10. Alhazen ſuppoſed that the refraction of the atmoſphere did not depend upon the vapours in it, as was probably the opinion of philoſophers before his time, but on the different tranſparency; by which, as Montucla conjectures, he meant the denſity of the groſs air contiguous to the earth, and the æther or ſubtile air that lies beyond it. In examining the effects of refraction, he endeavours to prove, that it is ſo far from being the cauſe of the heavenly bodies appearing larger near the horizon, that it would make them appear leſs; two ſtars, he ſays, appearing nearer together in the horizon than near the meridian. This phenomenon he ranks among optical deceptions. We judge of diſtance, he ſays, by comparing the angle under which objects appear, with their ſuppoſed diſtance; ſo that if theſe angles be nearly equal, and the diſtance of one object be conceived greater than that of the other, it will be imagined to be larger. And the ſky near the horizon, he ſays, is always imagined to be further from us than any other part of the concave ſurface. Roger Bacon aſcribes this account of the horizontal moon to Ptolemy; and as ſuch it is examined and objected to by B. Porta.

11. In the writings of this Bacon, whoſe genius perhaps equalled that of his great nameſake, Lord Verulam, we find the firſt diſtinct account of the magnifying power of glaſſes; and it is not improbable, that what he wrote upon this ſubject gave riſe to that moſt uſeful invention of ſpectacles. For he ſays, that if an object be applied cloſe to the baſe of the larger ſegment of a ſphere of glaſs, it will appear magnified. He alſo treats of the appearance of an object through a globe, and ſays that he was the firſt who obſerved the refraction of rays into it.

12. In 1270, Vitellio, a native of Poland, publiſhed a treatiſe of optics, containing all that was valuable in Alhazen, and digeſted in a much more intelligible and methodical manner. He obſerves, that light is always loſt by refraction, in conſequence of which the objects ſeen by refracted light always appear leſs luminous; but he does not attempt to eſtimate the quantity of this loſs. He reduced into a table the reſult of his experiments on the refractive powers of air, water, and glaſs, correſponding to different angles of incidence. In his account of the horizontal moon he agrees exactly with Alhazen; obſerving, that in the horizon ſhe ſeems to touch the earth, and appears much more diſtant from us than in the zenith, on account of the intermediate ſpace containing a greater variety of objects upon the viſible ſurface

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ſurface of the earth. He aſcribes the twinkling of the ſtars to the motion of the air in which the light is refracted; and to illuſtrate this hypotheſis, he obſerves, that they twinkle ſtill more when viewed in water put in motion. He alſo ſhows, that refraction is neceſſary, as well as reflection, to form the RAINBOW; becauſe the body which the rays fall upon is a tranſparent ſubſtance, at the ſurface of which one part of the light is always reflected and another refracted. But he ſeems to conſider refraction as ſerving only to condenſe the light, and thereby enabling it to make a ſtronger impreſſion upon the eye. He alſo makes ſome ingenious attempts to explain refraction, or to aſcertain the law of it. He alſo conſiders the foci of glaſs ſpheres, and the apparent ſize of objects ſeen through them; though upon theſe ſubjects he is not at all exact. It is ſufficient indeed to ſhow the ſtate of knowledge, or rather of ignorance, at that time, to obſerve, that both Vitellio and his maſter Alhazen endeavour to account for objects appearing larger when they are ſeen under water, by the circular figure of its ſurface; ſince, being fluid, it conforms to the figure of the earth.

13. Contemporary with Vitellio was ROGER BACON, a man of very extenſive genius, and who wrote upon almoſt every branch of ſcience; yet in this branch he does not ſeem to have made any conſiderable advances beyond Alhazen. Even ſome of the wildeſt and moſt abſurd of the opinions of the ancients have had the ſanction of his authority. He aſſents to an opinion adopted by many of the ancients, and moſt philoſophers till his time, that viſual rays proceed from the eye. In his *Specula Mathematica*, he added ſome obſervations on the refraction of the light of the ſtars; the apparent ſize of objects; the extraordinary ſize of the ſun and moon in the horizon: but in all this he is not very exact.

14. From this time to that of the revival of learning in Europe, we have no farther treatiſe on refraction, or on any other part of optics. One of the firſt who diſtinguiſhed himſelf in this way was MAUROLYCUS, teacher of mathematics at Meſſina. In a treatiſe, *De Lumine et Umbra*, publiſhed in 1575, he demonſtrates that the cryſtalline humour of the eye is a lens that collects the rays of light iſſuing from the objects, and throws them upon the retina, where is the focus of each pencil. From this principle he diſcovered the reaſon why ſome people were *ſhort-ſighted* and others *long-ſighted*; and why the former are relieved by concave, and the others by convex glaſſes.

15. About the ſame time that Maurolycus made ſuch advances towards the diſcovery of the nature of viſion, JOHN BAPTISTA PORTA of Naples diſcovered the *camera obſcura*, which throws ſtill more light on the ſame ſubject. His houſe was conſtantly reſorted to by all the ingenious perſons at Naples, whom he formed into what he called *an academy of ſecrets*; each member being obliged to contribute ſomething that was not generally known, and might be uſeful. Thus he was furniſhed with materials for his *Magia Naturalis*, which contains his account of the *camera obſcura*, and the firſt edition of which was publiſhed when he was not quite 15 years old. He alſo gave the firſt hint of the magic lantern, which Kircher afterwards followed, and improved. His experiments with the *camera obſcura* convinced him that viſion is performed by the intromiſſion of ſomething into the eye, and not by viſual rays proceeding from the eye, as had been formerly imagined; and he was the firſt who fully ſatisfied himſelf and others upon this ſubject. Indeed the reſemblance between experiments with the *camera obſcura* and the manner in which viſion is performed in the eye, was too ſtriking to eſcape the obſervation of a leſs ingenious perſon. But when he ſays that the eye is a *camera obſcura*, and the pupil the hole in the window-ſhutter, he was ſo far miſtaken as to ſuppoſe that it was the cryſtalline humour that correſponds to the wall which receives the images; nor was it diſcovered till 1604, that this office is performed by the retina. He makes a variety of juſt obſervations concerning viſion; and particularly explains ſeveral caſes in which we imagine things to be without the eye, when the appearances are occaſioned by ſome affection of the eye itſelf, or ſome motion within the eye. He obſerves alſo, that, in certain circumſtances, viſion will be aſſiſted by convex or concave glaſſes; and he ſeems alſo to have made ſome ſmall advances towards the diſcovery of teleſcopes. He takes notice, that a round and flat ſurface plunged into water will appear hollow, as well as magnified, to an eye perpendicularly over it; and he very well explains, by a figure, the manner in which it is done.

16. All this time, however, the great problem concerning the meaſuring of refractions had remained unſolved. Alhazen and Vitellio, indeed, had attempted it; but failed, by attempting to meaſure the angle itſelf inſtead of its ſine. At laſt it was diſcovered by SNELLIUS, profeſſor of mathematics at Leyden. This philoſopher, however, did not perfectly underſtand his own diſcovery, nor did he live to publiſh any account of it himſelf. It was afterwards explained by profeſſor HORTENSIUS, both publicly and privately, before it appeared in the writings of DESCARTES, who publiſhed it under a different form, without making any acknowledgment of his obligations to Snellius, whoſe papers, Huygens aſſures us, from his own knowledge, Deſcartes had ſeen. Before this time Kepler had publiſhed a New Table of refracted Angles, determined by his own experiments, for every degree of incidence. Kircher had done the ſame, and attempted a rational or phyſical theory of refraction, on principle.

17. DESCARTES undertook to explain the cauſe of refraction by the reſolution of forces, on the principles of mechanics. In conſequence of this, he was obliged to ſuppoſe that light paſſes with more eaſe through a denſe medium than through a rare one. The truth of this explanation was firſt queſtioned by M. Fermat, counſellor to the parliament of Thouloufe, and an able mathematician. He aſſerted, contrary to the opinion of Deſcartes, that light ſuffers more reſiſtance in water than in air, and more in glaſs than in water; and he maintained, that the reſiſtance of different mediums with reſpect to light is in proportion to their denſities. M. LEIBNITZ adopted the ſame general idea; and theſe gentlemen argued upon the

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ſubject in a manner which did not afford ſatisfaction; and a little time ſhowed the fallacy of their different hypotheſes.

18. At a meeting of the Royal Society, Aug. 31. 1664, an experiment for meaſuring the refraction of common water was made with a new inſtrument which they had prepared for that purpoſe; and, the angle of incidence being 40°, that of refraction was found to be 30°. About this time alſo we find the firſt mention of mediums not refracting the light in an exact proportion to their denſities. For Mr Boyle, in a letter to Mr Oldenburgh, dated Nov. 3. 1664, obſerves, that in ſpirit of wine, the proportion of the ſines of the angles of incidence to the ſines of the angles of refraction was nearly the ſame as 4 to 3; and that, as ſpirit of wine occaſions a greater refraction than common water, ſo oil of turpentine, which is lighter than ſpirit of wine, produces not only a greater refraction than common water, but a much greater than ſalt water. And at a meeting held Nov. 9. the ſame year, Dr Hooke brought in an account of an experiment that he made with pure and clear ſalad oil, which was found to have produced a much greater refraction than any liquor which he had then tried; the angle of refraction that anſwered to an angle of incidence of 30° being found no leſs than 40° 30′, and the angle of refraction that anſwered to an angle of incidence of 20° being 29° 47′.

19. M. De la Hire alſo made ſeveral experiments to aſcertain the refractive power of oil with reſpect to that of water and air, and found the ſine of the angle of incidence to that of refraction to be as 60 to 42; which, he obſerves, is a little nearer to that of glaſs than to that of water, though oil is much lighter than water, and glaſs much heavier. The members of the Royal Society finding, that the refraction of ſalt water exceeded that of freſh, purſued the experiment farther with ſolutions of vitriol, ſaltpetre, and alum, in water; when they found the refraction of the ſolution of vitriol and ſaltpetre a little more, but that of alum a little leſs, than common water.

20. Dr Hooke made an experiment before the Royal Society, Feb. 11. 1663, which clearly proves that ice refracts the light leſs than water; which he took to be a good argument that the lightneſs of ice, which cauſes it to ſwim in water, is not cauſed only by the ſmall bubbles which are viſible in it, but that it ariſes from the uniform conſtitution or general texture of the whole maſs. M. de la Hire alſo took a good deal of pains to determine whether, as was then the common opinion, the refractive power of ice and water were the ſame; and he found, as Dr Hooke had done before, that ice refracts leſs than water.

21. By a moſt accurate and elaborate experiment made in 1698, in which a ray of light was tranſmitted through a Torricellian vacuum, Mr Lowthorp found, that the refractive power of air is to that of water as 36 to 34,400. He concludes his account of the experiment with obſerving, that the refractive power of bodies is not proportioned to the denſity, at leaſt not to the gravity, of the refracting medium. For the refractive power of glaſs, to that of water, is as 55 to 34, whereas its gravity is as 87 to 34; that is, the ſquares of their refractive powers are very nearly as their reſpective gravities. And there are ſome fluids, which, though they are lighter than water, yet have a greater power of refraction. Thus the refractive power of ſpirit of wine, according to Dr Hooke's experiment, is to that of water as 36 to 33, and its gravity reciprocally as 33 to 36, or 36½. But the refractive powers of air and water ſeem to obſerve the ſimple proportion of their gravities directly.

22. Caſſini the younger was preſent when Mr Lowthorp made the above-mentioned experiment before the Royal Society; and upon his return home, having made a report of it to the members of the Royal Academy of Sciences, thoſe gentlemen endeavoured to repeat the experiment in 1700; but they did not ſucceed.—For, as they ſaid, beams of light paſſed through the vacuum without ſuffering any refraction. The Royal Society being informed of this, were deſirous that it might be put paſt diſpute, by repeated and well-atteſted trials; and ordered Mr Hauksbee to make an inſtrument for the purpoſe, by the direction of Dr Halley. It conſiſted of a ſtrong braſs priſm, two ſides of which had ſockets to receive two plane glaſſes, whereby the air in the priſm might either be exhauſted or condenſed. The priſm had alſo a mercurial gage fixed to it, to diſcover the denſity of the contained air; and was contrived to turn upon its axis, in order to make the refractions equal on each ſide when it was fixed to the end of a teleſcope. The refracting angle was near 64°; and the length of the teleſcope was about 10 feet, having a fine hair in its focus. The event was as follows:

23. Having choſen a proper and very diſtinct erect object, whoſe diſtance was 2588 feet, June 15. O. S. 1708, in the morning, the barometer being then at 29.7½, and the thermometer at 60, they firſt exhauſted the priſm, and then applying it to the teleſcope, the horizontal hair in the focus covered a mark on the object diſtinctly ſeen through the vacuum, the two glaſſes being equally inclined to the viſual ray. Then admitting the air into the priſm, the object was ſeen to riſe above the hair gradually as the air entered, and in the end the hair was obſerved to hide a mark 10¼ inches below the former mark. This they often repeated, and with the ſame ſucceſs. After this, they applied the condenſing engine to the priſm; and having forced in another atmoſphere, ſo that the denſity of the included air was double to that of the outward, they again placed it before the teleſcope, and, letting out the air, the object, which before ſeemed to riſe, appeared gradually to deſcend, and the hair at length reſted on an object higher than before by the ſame interval of 10¼ inches. This experiment they likewiſe frequently repeated without any variation in the event. They then forced in another atmoſphere; and upon diſcharging the condenſed air, the object was ſeen near 21 inches lower than before.

24. Now the radius in this caſe being 2588 feet, 10¼ inches will ſubtend an angle of one minute and 8 ſeconds, and the angle of incidence of the viſual ray being 32° (becauſe the angle of the glaſs planes was 64), it follows from the known laws of refraction, that as the ſine of 39° is to that of 31°, 59′, 26″ differing from 32° by 34″ the half

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of 1', 8"; ſo is the ſine of any other incidence, to the ſine of its angle of refraction; and ſo is radius, or 1000000, to 999736; which, therefore, is the proportion between the ſine of incidence *in vacuo* and the ſine of refraction from thence into common air. It appears, by theſe experiments, that the refractive power of the air is proportionable to its denſity. And ſince the denſity of the atmoſphere is as its weight directly, and its heat inverſely, the ratio of its denſity, at any given time, may be had by comparing the heights of the barometer and thermometer; and thence he concludes that this will alſo be the ratio of the refraction of the air. But Dr SMITH obſerves, that, before we can depend upon the accuracy of this concluſion, we ought to examine whether heat and cold alone may not alter the refractive power of air, while its denſity continues the ſame. This, he ſays, may be tried, by heating the condenſed or rarefied air, ſhut up in the priſm, juſt before it is fixed to the teleſcope, and by obſerving whether the hair in its focus will continue to cover the ſame mark all the while that the air is cooling.

25. The French academicians, being informed of the reſult of the above-mentioned experiment, employed M. DELISLE the younger to repeat their former experiment with more care; and he preſently found, that their operators had never made any vacuum at all, there being chinks in their inſtrument, through which the air had inſinuated itſelf. He therefore annexed a gage to his inſtrument, by which means he was ſure of his vacuum; and then the reſult of the experiment was the ſame with that in England. The refraction was always in proportion to the denſity of the air, excepting when the mercury was very low, and conſequently the air very rare; in which caſe the whole quantity being very ſmall, he could not perceive much difference in them. Comparing, however, the refractive power of the atmoſphere obſerved at Paris with the reſult of his experiment, he found, that the beſt vacuum he could make was far ſhort of that of the etherial regions above the atmoſphere.

26. Dr HOOKE firſt ſuggeſted the thought of making allowance for the effect of the refraction of light, in paſſing from the higher and rarer, to the lower and denſer regions of the atmoſphere, in the computed height of mountains. To this he aſcribes the different opinions of authors concerning the height of ſeveral very high hills. He could not account for the appearance of the Peak of Teneriffe, and ſeveral very high mountains, alſo great a diſtance as that at which they are actually ſeen, but upon the ſuppoſition of the curvature of the viſual ray, that is made by its paſſing obliquely through a medium of ſuch different denſity, from the top of them to the eye, very far diſtant in the horizon. All calculations of the height of mountains that are made upon the ſuppoſition that the rays of light come from the tops of them, to our eyes, in ſtraight lines, muſt, he ſays, be very erroneous. Dr Hooke gives a very good account of the TWINKLING OF THE STARS; aſcribing it to the irregular and unequal refraction of the rays of light, which is alſo the reaſon why the limbs of the ſun, moon, and planets appear to wave or dance. And that there is ſuch an unequal diſtribution of the parts of the atmoſphere, he ſays, is manifeſt from the different degrees of heat and cold in the air. This, he ſays, will be evident by looking upon diſtant objects, over a piece of hot glaſs, which cannot be ſuppoſed to throw out any kind of exhalation from itſelf, as well as through aſcending ſteams of water.

27. About this time GRIMALDI firſt obſerved that the coloured image of the ſun refracted through a priſm is always oblong, and that colours proceed from refraction.—The way in which he firſt diſcovered this, was by Vitellio's experiment above mentioned, in which a piece of white paper placed at the bottom of a glaſs veſſel filled with water, and expoſed to the light of the ſun, appears coloured. However, he obſerved, that in caſe the two ſurfaces of the refracting medium were exactly parallel to each other, no colours were produced. But of the true cauſe of thoſe colours, viz. the different refrangibility of the rays of light, he had not the leaſt ſuſpicion.

28. This diſcovery was reſerved for Sir ISAAC NEWTON, and occured to him in 1666. At that time he was buſied in grinding optic glaſſes, and procured a triangular glaſs priſm to ſatisfy himſelf concerning the phenomena of colours. While he amuſed himſelf with this, the oblong figure of the coloured ſpectrum firſt ſtruck him. He was ſurpriſed at the great diſproportion betwixt its length and breadth; the former being about five times the meaſure of the latter. He could hardly think that any difference in the thickneſs of the glaſs, or in the compoſition of it, could have ſuch an influence on the light. However, without concluding any thing *à priori*, he proceeded to examine the effects of theſe circumſtances, and tried what would be the conſequence of tranſmitting the light through parts of the glaſs that were of different thickneſſes, or through holes in the window-ſhutter of different ſizes; or by ſetting the priſm on the outſide of the ſhutter, that the light might paſs through it, and be refracted before it was terminated by the hole. He then ſuſpected that theſe colours might ariſe from the light being dilated by ſome unevenneſs in the glaſs, or ſome other accidental irregularity; and to try this, he took another priſm, like the former, and placed it in ſuch a manner as that the light paſſing through them both might be refracted contrarywiſe, and ſo be returned by the latter into the ſame courſe from which it had been diverted by the former. In this manner he thought that the regular effects of the firſt priſm would be deſtroyed by the 2d; but that the irregular ones would be augmented by the multiplicity of refractions. The event was, that the light, which by the firſt priſm was diffuſed into an oblong form, was by the 2d reduced into a circular one, with as much regularity as if it had not paſſed through either of them.

29. At laſt, after various experiments and conjectures, he hit upon what he calls the *experimentum crucis*, and which completed this great diſcovery. He took two boards, and placed one of them cloſe behind the priſm at the windows, ſo that the light might paſs through a ſmall hole made in it for the purpoſe, and fall on the other

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board, which he placed at the distance of about 12 feet; having first made a small hole in it also, for some of that incident light to pass through. He then placed another prism behind the 2d board, so that the light which was transmitted through both the boards might pass through that also, and be again refracted before it arrived at the wall. This done, he took the first prism in his hand, and turned it about its axis, so much as to make the several parts of the image cast on the second board successively to pass through the hole in it, that he might observe to what places on the wall the 2d prism would refract them; and he saw, by the change of those places, that the light tending to that end of the image towards which the refraction of the first prism was made, did, in the 2d prism, suffer a refraction considerably greater than the light which tended to the other end. The true cause, therefore, of the length of the image was discovered to be no other, than that light is not similar or homogeneal; but that it consists of rays, some of which are more refrangible than others: so that, without any difference in their incidence on the same medium, some of them shall be more refracted than others; and therefore, that, according to their particular degrees of refrangibility, they will be transmitted through the prism to different parts of the opposite wall.

30. Since it appears from these experiments, that different rays of light have different degrees of refrangibility, it necessarily follows, that the rules laid down by preceding philosophers concerning the refractive power of water, glass, &c. must be limited to the middle kind of ray. Sir Isaac, however, proves that the sine of the incidence of every kind of light, considered apart, is to its sine of refraction in a given ratio. This he deduces, both by experiment, and also geometrically, from the supposition that bodies refract the light by acting upon its rays in lines perpendicular to their surfaces.

31. The most important discovery with regard to refraction, since the time of Sir Isaac Newton, is that of Mr Dollond, who found out a method of curing the faults of refracting telescopes arising from the different refrangibility of the rays, and which had been generally thought impossible to be removed.—Notwithstanding the great discovery of Sir Isaac Newton concerning the different refrangibility of the rays of light, he had no idea but that they were all affected in the same proportion by every medium, so that the refrangibility of the extreme rays might be determined if that of the mean ones was given. From this it would follow, as Mr Dollond observes, that equal and contrary refractions must not only destroy each other, but that the divergency of the colours from one refraction would likewise be corrected by the other, and that there could be no possibility of producing any such thing as refraction, which would not be affected by the different refrangibility of light; or, in other words, that however a ray of light might be refracted backwards and forwards by different mediums, as water, glass, &c. provided it was so done that the emergent ray should be parallel to the incident one, it would ever after be white; and consequently, if it should come out inclined to the incident, it would diverge, and ever after be coloured; and from this it was natural to infer, that all spherical object-glasses of telescopes must be equally affected by the different refrangibility of light, in proportion to their apertures, of whatever materials they may be formed.

32. For this reason, Sir Isaac Newton, and all other philosophers and opticians, had despaired of bringing refracting telescopes to any great degree of perfection, without making them of an immoderate and very inconvenient length. They therefore applied themselves chiefly to the improvement of the reflecting telescope; and the business of refraction was dropped till about 1747, when M. Euler, improving upon a hint of Sir Isaac Newton's, formed a scheme of making object-glasses of two materials, of different refractive powers; hoping, that by this difference, the refractions would balance one another, and thereby prevent the dispersion of the rays that is occasioned by the difference of refrangibility. These object-glasses were composed of two lenses of glass, with water between them. This memoir of M. Euler excited the attention of Mr Dollond. He carefully went over all M. Euler's calculations, substituting for his hypothetical laws of refraction those which had been actually ascertained by the experiments of Newton; and found, that, after this necessary substitution, it followed from M. Euler's own principles, that there could be no union of the foci of all kinds of colours, but in a lens infinitely large.

33. M. Euler did not mean to controvert the experiments of Newton: but he said, that they were not contrary to his hypothesis, but in so small a degree as might be neglected; and asserted, that, if they were admitted in all their extent, it would be impossible to correct the difference of refrangibility occasioned by the transmission of the rays from one medium into another of different density; a correction which he thought was very possible, since he supposed it to be actually effected in the structure of the eyes, which, in his opinion, was made to consist of different mediums for that very purpose. To this kind of reasoning Mr Dollond made no reply, but by appealing to the experiments of Newton, and the great circumspection with which it was known that he conducted all his inquiries. In this state of the controversy, the friends of M. Clairaut engaged him to attend to it; and it appeared to him, that, since the experiments of Newton cited by Mr Dollond could not be questioned, the speculations of M. Euler were more ingenious than useful.

34. The same paper of M. Euler was also particularly noticed by M. Klingenstierna of Sweden, who gave a considerable degree of attention to the subject, and discovered, that, from Newton's own principles, the result of the 8th experiment of the 2d book of his Optics could not answer his description of it. He found, he says, that when light goes out of air through several contiguous refracting mediums, as through water and glass, and thence goes out again into air, whether the refracting surfaces be parallel or inclined to one another, that light, as often as by contrary

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contrary refractions it is ſo corrected as to emerge in lines parallel to thoſe in which it was incident, continues ever after to be white; but if the emergent rays be inclined to the incident, the whiteneſs of the emerging light will, by degrees, in paſſing on from the place of emergence, become tinged at its edges with colours. This he tried, by refracting light with priſms of glaſs placed within a priſmatic veſſel of water. By theorems deduced from this experiment he infers, that the refractions of the rays of *every* ſort, made out of any medium into air, are known by having the refraction of the rays of *any one* ſort; and alſo that the refraction out of one medium into another is found as often as we have the refractions out of them both into any third medium. On the contrary, the Swediſh philoſopher obſerves, that, in this experiment, the rays of light, after paſſing through the water and the glaſs, though they come out parallel to the incident rays, will be coloured; but that the ſmaller the glaſs priſm is, the nearer will the reſult of it approach to Newton's deſcription.

35. This paper of M. Klingenſtierna being communicated to Mr Dollond by M. Mallet, made him entertain doubts concerning Newton's report, and determined him to have recourſe to experiment. He therefore cemented together two plates of parallel glaſs at their edges, ſo as to form a priſmatic veſſel, when ſtopped at the ends or baſes; and the edge being turned downwards, he placed in it a glaſs priſm, with one of its edges upwards, and filled up the vacancy with clear water; ſo that the refraction of the priſm was contrived to be contrary to that of the water, in order that a ray of light, tranſmitted through both theſe refracting mediums, might be effected by the difference only between the two refractions. As he found the water to refract more or leſs than the glaſs priſm, he diminiſhed or increaſed the angle between the glaſs plates, till he found the two contrary refractions to be equal; which he diſcovered by viewing an object through this double priſm. For when it appeared neither raiſed nor depreſſed, he was ſatisfied that the refractions were equal, and that the emergent rays were parallel to the incident. Now, according to the prevailing opinion, he obſerves, the object ſhould have appeared through this double priſm in its natural colour; for if the difference of refrangibility had been in all reſpects equal in the two equal refractions, they would have rectified each other. But this experiment fully proved the fallacy of the received opinion, by ſhowing the divergency of the light by the glaſs priſm to be almoſt double of that by the water; for the image of the object, though not at all refracted, was yet as much infected with priſmatic colours, as if it had been ſeen through a glaſs wedge only whoſe refracting angle was near 30 degrees.

36. This experiment is the very ſame with that of Sir Iſaac Newton's above-mentioned, notwithſtanding the reſult was ſo remarkably different; but Mr Dollond aſſures us, that he uſed all poſſible precaution and care in his proceſs; and he kept his apparatus by him, that he might evince the truth of what he wrote, whenever he ſhould be properly required to do it. He plainly ſaw, however, that if the refracting angle of the water veſſel could have admitted of a ſufficient increaſe, the divergency of the coloured rays would have been greatly diminiſhed, or entirely rectified; and that there would have been a very great refraction without colour, as he had already produced a great diſcolouring without refraction; but the inconveniency of ſo large an angle as that of the priſmatic veſſel muſt have been, to bring the light to an equal divergency with that of the glaſs priſm whoſe angle was about 60°, made it neceſſary to try ſome experiments of the ſame kind with ſmaller angles. Accordingly, he got a wedge of plate glaſs, the angle of which was only 9°; and uſing it in the ſame circumſtances, he increaſed the angle of the water wedge, in which it was placed, till the divergency of the light by the water was equal to that by the glaſs; that is, till the image of the object, though conſiderably refracted by the exceſs of the refraction of the water, appeared nevertheleſs quite free from any colours proceeding from the different refrangibility of the light; and, as near as he could then meaſure, the refraction by the water was about $\frac{3}{4}$ of that by the glaſs.

37. As theſe experiments clearly proved that different ſubſtances made the light to diverge very differently, in proportion to their general refractive power, Mr Dollond began to ſuſpect that ſuch variety might poſſibly be found in different kinds of glaſs, eſpecially as experience had already ſhown that ſome of the kinds made much better object-glaſſes in the uſual way than others; and as no ſatisfactory cauſe had been aſſigned for ſuch difference, he thought there was great reaſon to preſume that it might be owing to the different divergency of the light in the ſame refractions. He therefore ground wedges of different kinds of glaſs, and applied them together; ſo that the refractions might be made in contrary directions, to diſcover whether the refraction and the divergency of the colours would vaniſh together. It was not till the end of 1757 that he undertook it; when he diſcovered a difference far beyond his hopes in the refractive qualities of different kinds of glaſs, with reſpect to the divergency of colours. The yellow or ſtraw-coloured foreign ſort, commonly called *Venice glaſs*, and the *Engliſh crown glaſs*, proved to be very nearly alike in that reſpect; though, in general, the crown glaſs ſeemed to make the light diverge leaſt. The common Engliſh plate glaſs made the light diverge more; and the white cryſtal, or Engliſh flint glaſs, moſt of all.

38. He now examined the particular qualities of every kind of glaſs that he could come at, not to amuſe himſelf with conjectures about the cauſe of this difference, but to fix upon two ſorts in which it ſhould be the greateſt; and he ſoon found theſe to be the crown glaſs and the white flint glaſs. He therefore ground one wedge of white flint, of about 25°; and another of crown glaſs, of about 29°: which refracted very nearly alike, but their power of making the colours diverge, was very different. He then ground ſeveral others of crown glaſs to different angles, till he got one which was equal, with reſpect to the divergency of the light, to that in the white flint glaſs: for when

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when they were put together, ſo as to refract in contrary directions, the reflected light was entirely free from colours. Then meaſuring the refraction of each wedge with theſe different angles, he found that of the white glaſs to be to that of the crown glaſs nearly as two to three: and this proportion held very nearly in all ſmall angles; ſo that any two wedges made in this proportion, and applied together, ſo as to refract in a contrary direction, would refract the light without any diſperſion of the rays.

39. In a letter to M. KLINGENSTIERNA, quoted by M. Clairaut, Mr Dollond ſays, that the ſine of incidence in crown glaſs is to that of its general refraction as 1 to 1·53, and in flint glaſs as 1 to 1·583. To apply this to practice, Mr Dollond went to work upon the object-glaſſes of teleſcopes; not doubting but that, upon the ſame principles upon which a refracted colourleſs ray was produced by priſms, it might be done by lenſes only, made of ſimilar materials. And he ſucceeded, by conſidering, that, in order to make two ſpherical glaſſes that ſhould refract the light in contrary directions, the one muſt be concave, and the other convex; and as the rays are to converge to a real focus, the exceſs of refraction muſt evidently be in the convex lens. Alſo, as the convex glaſs is to refract the moſt, it appeared from his experiments, that it muſt be made of crown glaſs, and the concave of white flint glaſs. Farther, as the refractions of ſpherical glaſſes are in an inverſe ratio of their focal diſtances, it follows that the focal diſtances of the two glaſſes ſhall be inverſely as the ratios of the refractions of the wedges; for being thus proportioned, every ray of light that paſſes through this combined glaſs, at whatever diſtance it may paſs from its axis, will conſtantly be refracted, by the difference between two contrary refractions, in the proportion required; and therefore the different refrangibility of the light will be entirely removed.

40. Notwithſtanding our author had theſe clear grounds in theory and experiment to go upon, he found that he had many difficulties to ſtruggle with: For, 1. The focal diſtances, as well as the particular ſurfaces, muſt be very nicely proportioned to the denſities or refracting powers of the glaſſes, which are very apt to vary in the ſame ſort of glaſs made at different times. 2. The centres of the two glaſſes muſt be placed truly in the common axis of the teleſcope, otherwiſe the deſired effect will be in a great meaſure deſtroyed. 3. There are four ſurfaces to be wrought perfectly ſpherical; all of which require the greateſt accuracy throughout the whole work. At length, however, after numerous trials, he conſtructed refracting teleſcopes, with ſuch apertures and magnifying powers, under limited lengths, as, in the opinion of the beſt judges, far exceeded any thing that had been produced before, repreſenting objects with great diſtinctneſs, and in their true colours.

41. It was objected to Mr Dollond's diſcovery, that the ſmall diſperſion of the rays in crown glaſs is only apparent, owing to the opacity of that kind of glaſs which does not tranſmit the fainter coloured rays in a ſufficient quantity; but this objection is anſwered by M. BEGUELIN. As Mr Dollond did not explain the methods which he took, in the choice of different ſpheres proper to deſtroy the effect of the different refrangibility of the rays of light; and as the calculation of the diſperſion of the rays, in ſo complicated an affair, is very delicate; M. CLAIRAUT endeavoured to make out a complete theory of it; as without ſome aſſiſtance of this kind, it is impoſſible to conſtruct teleſcopes of equal goodneſs with thoſe of Mr Dollond. Beſides, Mr Dollond only gave his proportions in general, whereas the greateſt poſſible preciſion is neceſſary.

42. With a view, therefore, to aſſiſt the artiſt, he endeavoured to aſcertain the refractive power of different kinds of glaſs, and their property of ſeparating the rays of light, by the following methods. He made uſe of two priſms placed cloſe to one another, as Mr Dollond had done: but he placed them in a darkened room; and when the image of the ſun tranſmitted through them was perfectly white, he concluded that the different refrangibility of the rays was corrected. To aſcertain with more eaſe the true angles that priſms ought to have, to deſtroy the effect of the difference of refrangibility, he conſtructed one which had one of its ſurfaces cylindrical, with ſeveral degrees of amplitude. Thus, without changing his priſms, he had the choice of an infinity of angles; among which, by examining the point of the curve ſurface, which, receiving the ſolar ray, gave a white image, he could eaſily find the true one. He alſo aſcertained the proportion in which different kinds of glaſs ſeparated the rays of light, by meaſuring, with proper precautions, the oblong image of the ſun, made by tranſmitting a beam of light through them. In making theſe experiments, he hit upon an eaſy method of proving the greater refractive power of Engliſh flint glaſs above the common French glaſs, both with reſpect to the mean refraction, and the different refrangibility of the colours; for having taken two priſms of theſe two kinds of glaſs, but equal in all other reſpects, and placed them ſo that they received at the ſame time two rays of the ſun with the ſame degree of incidence, he ſaw, that of the two images, that which was produced by the Engliſh flint-glaſs was a little higher up on the wall than the other, and longer by more than one half.

43. M. CLAIRAUT was aſſiſted in theſe experiments by M. De TOURNIERES, and the reſults agreed with Mr Dollond's in general; but whereas Mr Dollond had made the diſperſion of the rays in glaſs and in water to be as 5 to 4, theſe gentlemen, who uſed more precautions, found it to be as 3 to 2. For the theorems and problems deduced by M. Clairaut from theſe new principles, we refer the reader to *Mem. Acad. Par.* 1756, 1757.

44. The labours of M. Clairaut were ſucceeded by thoſe of M. D'ALEMBERT, which ſeem to have given the makers of theſe achromatic teleſcopes all the aid that calculations can afford them. This excellent mathematician likewiſe propoſed a variety of new conſtructions of theſe teleſcopes; at the ſame time he points out ſeveral methods of correcting the errors to which they are liable: as by placing the object-glaſſes, in ſome caſes, at a ſmall

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ſmall diſtance from one another, and ſometimes by uſing eye-glaſſes of different refractive powers. He ſhows, that teleſcopes may be made to advantage, conſiſting of only one object-glaſs, and an eye-glaſs of a different refractive power. This ſubject he conſidered at large in one of the *Opuſcules Mathematiques*. We have alſo 3 of his memoirs upon this ſubject, among thoſe of the French academy, in 1764, 1765, and 1767.

45. Notwithſtanding Meſſrs Clairaut and D'Alembert ſeemed to have exhauſted the bnſineſs of calculation, on the ſubject of Mr Dollond's teleſcopes, no uſe could be made of their labours by foreign artiſts. For ſtill the teleſcopes made in England, according to no exact rule, as foreigners ſuppoſed, were greatly ſuperior to any made elſewhere, though under the immediate direction of thoſe able calculators. For this M. Beguelin aſſigned ſeveral reaſons: 1. Their geometrical theorems were too general, and their calculations too complicated, for the uſe of workmen: 2. In conſequence of neglecting ſmall quantities, which theſe calculators profeſſedly did, to make their algebraical expreſſions more commodious, their concluſions were not ſufficiently exact: But 3. What he thought to be of the moſt conſequence, was the want of an exact method of meaſuring the refractive and diſperſing powers of the different kinds of glaſs; and for want of this, the greateſt preciſion in calculation was altogether uſeleſs.

46. Theſe conſiderations induced this gentleman to take another view of this ſubject; but ſtill he could not reconcile the actual effect of Mr Dollond's teleſcopes with his own concluſions: ſo that he imagined, either that he had not the true refraction and diſperſion of the two kinds of glaſs given him; or elſe, that the aberration which ſtill remained after his calculations, muſt have been deſtroyed by ſome irregularity in the ſurfaces of the lenſes. He finds ſeveral errors in the calculations both of M. D'Alembert and Clairaut.

47. M. Euler, who firſt gave occaſion to this inquiry, being perſuaded both by his reaſoning and calculations, that Mr Dollond had diſcovered no new principle in optics, and yet not being able to controvert Mr Short's teſtimony in favour of the goodneſs of his teleſcopes, concluded that this extraordinary effect was owing, in part, to the crown glaſs not tranſmitting all the red light, which would otherwiſe have come to a different focus, and have diſtorted the image; but principally to his happening to hit on a juſt curvature of his glaſs, which he did not doubt would have produced the ſame effect if his lenſes had all been made of the ſame kind of glaſs. He alſo imagined that the goodneſs of Mr Dollond's teleſcope might be owing to the eye-glaſs. At length, however, M. Euler was convinced of the reality and importance of Mr Dollond's diſcoveries; and frankly acknowledged, that he ſhould perhaps never have been brought to aſſent to it, had not his friend M. Clairaut aſſured him, that the experiments of the Engliſh optician might be depended upon.

48. However, the experiments of M. Zeiher of Peterſburgh gave him the moſt complete ſatisfaction, with reſpect to this new law of refraction. This gentleman demonſtrated, that it is the lead in the compoſition of glaſs that gives it this remarkable property, that while the refraction of the mean rays is nearly the ſame, that of the extremes differs conſiderably. And, by increaſing the quantity of lead in the mixture, he produced a kind of glaſs, which occaſioned a much greater ſeparation of the extreme rays than the flint-glaſs which Mr Dollond had made uſe of. By this evidence, M. Euler owns that he was compelled to renounce the principle which, before this time, had been conſidered as inconteſtible, viz. that the diſperſion of the extreme rays depends upon the refraction of the mean; and that the former varies with the qualities of the glaſs, while the latter is not affected by it.

49. From theſe new principles M. Euler deduced theorems concerning the combinations of the lenſes; and, in a manner ſimilar to M. Clairaut and D'Alembert, points out methods of conſtructing achromatic teleſcopes. While he was employed upon this ſubject, he informs us, that he received a letter from M. Zeiher, dated Peterſburgh, 30th January 1764, in which he gives him a particular account of the ſucceſs of his experiments on the compoſition of glaſs: and that, having mixed minium and ſand in different proportions, the reſult of the mean refraction and the diſperſion of the rays varied according to the following

50. TABLE.

	Proportion of minium to flint.			Mean refraction from air into glaſs.			Diſperſion of the rays in compariſon of crown-glaſs.		
I.	3	:	1	2028	:	1000	4800	:	1090
II.	2	:	1	1830	:	1000	3550	:	1080
III.	1	:	1	1787	:	1000	3259	:	1000
IV.	½	:	1	1732	:	1000	2207	:	1000
V.	¼	:	1	1742	:	1000	1800	:	1000
VI.	¼	:	1	1664	:	1000	1354	:	1000

51. By this table it is evident, that a greater quantity of lead not only occaſions a greater diſperſion of the rays, but alſo conſiderably increaſes the mean refraction. The firſt of theſe kinds of glaſs, which contains three times as much minium as flint, will appear very extraordinary; ſince, hitherto, no tranſparent ſubſtance has been known, whoſe refractive power exceeded the ratio of two to one, and that the diſperſion occaſioned by this glaſs is almoſt five times as great as that of crown glaſs, which could not be believed by thoſe who entertained any doubt concerning the ſame property in flint-glaſs, the effect of which is three times as great as crown glaſs.

52. M. Euler announces to us another diſcovery of M. Zeiher, no leſs ſurpriſing than the former, and which diſconcerted all his ſchemes for reconciling the above-mentioned phenomena. As the ſix kinds of glaſs mentioned in the above table were compoſed of nothing but minium and flint, M. Zeiher propoſed mixing alkaline ſalts with them, to give the glaſs a conſiſtence more proper for dioptric uſes; and was ſurpriſed to find this mixture greatly diminiſhed the mean refraction, almoſt without making any change in

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change in the diſperſion. After many trials, he obtained a kind of glaſs greatly ſuperior to the flint glaſs of Mr Dollond, with reſpect to the conſtruction of teleſcopes; ſince it occaſioned three times as great a diſperſion of the rays as the common glaſs, at the ſame time that the mean refaction was only as 1·61 to 1. M. Euler alſo gives inſtructions how to find both the mean and extreme refractive power of different kinds of glaſs; and adviſes to make uſe of priſms with very large refracting angles, not leſs than 70°.

53. Notwithſtanding it evidently appeared, that Mr Dollond had made a real diſcovery of ſomething not comprehended in the optical principles of Sir Iſaac Newton, it did not appear ſo to Mr Murdoch. Upon this occaſion, he interpoſed in the defence of Sir Iſaac Newton; maintaining, that Mr Dollond's poſitions, which he ſays, he knows not by what miſhap have been deemed paradoxes in Sir Iſaac's theory of light, are really the neceſſary conſequences of it. But, admitting all that he advances in this part of his defence, Newton muſt have made uſe of a priſm with a much ſmaller refracting angle than, from his own account of his experiments, we have any reaſon to believe that he ever did make uſe of. The fact probably was, that Sir Iſaac deceived himſelf in this caſe, by attending to what he imagined to be the clear conſequences of his other experiments. In reality, it is no reflection upon Sir Iſaac Newton, who did ſo much, to ſay that he was miſtaken in this particular caſe, and that he did not make the diſcovery that Mr Dollond did; though Mr Dollond, and all who contributed to this diſcovery, have no ſmall merit in venturing to queſtion the authority of ſo great a man.

54. Mr Dollond, however, was not the only optician who had the merit of making this diſcovery; it had alſo been made and applied by Mr Chest of Cheſt-hall. He had obſerved that priſms of flint glaſs gave larger ſpectrums than priſms of water, when the mean refraction was the ſame in both, *i. e.* when the deviation of the refracted ray from the direction of the incident was the ſame. He tried priſms of other glaſs, and found ſimilar differences; and he employed the diſcovery in the ſame manner, and made achromatic experiments ſome time before Dollond. There is, however, no evidence that Dollond ſtole the idea from Mr Cheſt, or that they had not both claims to the diſcovery.

55. Still the beſt refracting teleſcopes, conſtructed on the principles of Mr Dollond, are defective, on account of that colour which, by the aberration of the rays, they give to objects viewed through them, unleſs the object glaſs be of ſmall diameter. This defect, men of genius and ſcience have laboured to remove, ſome by one contrivance and ſome by another. F. Boscovich, to whom every branch of optics is much indebted, has, in his attempts for this purpoſe, diſplayed much ingenuity; but the philoſopher whoſe exertions have been crowned with moſt ſucceſs, and who has perhaps made the moſt important diſcovery in this branch of ſcience ſince the era of Newton, is Dr Robert Blair, regius profeſſor of aſtronomy in the college of Edinburgh.

56. By a judicious ſet of experiments ably conducted, Dr Blair has proved, that the quality of diſperſing the rays in a greater degree than crown glaſs, is not confined to a few mediums, but is poſſeſſed by a great variety of fluids, and by ſome of theſe in a moſt extraordinary degree. He has ſhown, that although the greater refrangibility of the violet rays than of the red rays, when light paſſes from any medium whatever into a vacuum, may be conſidered as a law of nature; yet in the paſſages of light from one medium into another, it depends entirely on the qualities of the mediums which of theſe rays ſhall be the moſt refrangible, or whether there ſhall be any difference in their refrangibility. To correct the aberration ariſing from difference of refrangibility among the rays of light, he inſtituted a ſet of experiments, in the conducting of which he detected a very ſingular and important quality in the muriatic acid. In all the diſperſive mediums hitherto examined, the green rays, which are the mean refrangible in crown glaſs, were found among the leſs refrangible; but in the muriatic acid, theſe ſame rays were found by him to make a part of the more refrangible. This diſcovery led to complete ſucceſs in removing the great defect of optical inſtruments, viz. that diſſipation of Aberration of the rays which ariſes from their unequal refrangibility, and has hitherto rendered it impoſſible to converge all of them to one point, either by ſingle or oppoſite refractions. A fluid, in which the particles of marine acid and metalline particles hold a due proportion, at the ſame time that it ſeparates the extreme rays of the ſpectrum much more than crown glaſs, refracts all the orders of the rays in the ſame proportion that glaſs does: and hence rays of all colours, made to diverge by the refraction of the glaſs, may either be rendered parallel by a ſubſequent refraction made in the confine of the glaſs and this fluid; or by weakening the refractive denſity of the fluid, the refraction which takes place in the confine of it; and glaſs may be rendered as regular as reflection, without the leaſt colour whatever. The Doctor has a teleſcope, not exceeding 15 inches in length, with a compound object-glaſs of this kind, which equals in all reſpects, if it does not ſurpaſs, the beſt of Dollond's 42 inches long. Of this object-glaſs a figure will be found in the 3d volume of the *Tranſactions of the Royal Society of Edinburgh*; to which we refer our readers for a full and perſpicuous account of the experiments which led to this diſcovery, as well as of the important purpoſes to which it may be applied.

57. We conclude the hiſtory of the diſcoveries concerning refraction with ſome account of the refractions of the atmoſphere. Tables of this have been calculated by Mr Lambert, to correct the inaccuracies of geometrical obſervations of the altitudes of mountains. The obſervations of Mr Lambert, however, go upon the ſuppoſition that the refractive power of the atmoſphere is invariable: But this is by no means the caſe; and therefore his rules muſt be conſidered as true for the mean ſtate of the air only.

58. A moſt remarkable variety in the refractive power of the atmoſphere was obſerved by Dr Nettleton, near Halifax in Yorkſhire, which demonſtrates how little we can depend upon the calculated

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calculated heights of mountains, when the obſervations are made with an inſtrument, and the refractive power of the air is to be allowed for. Being deſirous to learn, by obſervation, how far the mercury would deſcend in the barometer at any given elevation (for which there is the beſt opportunity in that hilly country), he propoſed to take the height of ſome of their higheſt hills; but when he attempted it, he found his obſervation diſturbed by refraction, that he could come to no certainty. Having meaſured one hill of a conſiderable height, in a clear day, and obſerved the mercury at the bottom and the top, he found, according to that eſtimation, that about 90 feet or more were required to make the mercury fall one 10th of an inch; but afterwards, repeating the experiment in a cloudy day, when the air was rather groſs and hazy, he found the ſmall angles ſo much increaſed by refraction as to make the hill much higher than before. He afterwards frequently made obſervations at his own houſe, by pointing a quadrant to the tops of ſome neighbouring hills, and obſerved that they would appear higher in the morning before ſunriſe, and alſo late in the evening, than at noon in a clear day, by ſeveral minutes. In one caſe the elevation of the ſame hill differed more than 30 minutes. From this he infers that obſervations made on very high hills, eſpecially when viewed at a diſtance, and under ſmall angles, as they generally are, are uncertain and not much to be depended upon.

59. M. EULER conſidered with great accuracy the refractive power of the atmoſphere, as affected by different degrees of heat and elaſticity; in which he ſhows, that its refractive power to a conſiderable diſtance from the zenith, is ſufficiently near the proportion of the tangent of that diſtance, and that the law of refraction follows the direct ratio of the height of the barometer, and the inverſe ratio of the difference marked by the thermometer; but when ſtars are in the horizon, the changes are in a ratio ſomewhat greater than this, more eſpecially on account of the variation in the heat.

60. The CAUSE of the TWINKLING of the STARS is now generally acknowledged to be the unequal refraction of light, in conſequence of inequalities and undulations in the atmoſphere. Mr MICHELL ſuppoſes that the arrival of fewer or more rays at one time, eſpecially from the ſmaller or the more remote fixed ſtars, may make ſuch an unequal impreſſion upon the eye, as may, at leaſt, have ſome ſhare in producing this effect; ſince it may be ſuppoſed, that even a ſingle particle of light is ſufficient to make a ſenſible impreſſion upon the organs of ſight; ſo that very few particles arriving at the eye in a ſecond of time, perhaps no more than 3 or 4, may be ſufficient to make an object conſtantly viſible. For though the impreſſion may be conſidered as momentary, yet the perception occaſioned by it is of ſome duration. Hence, he ſays, it is not improbable that the number of the particles of light which enter the eye in a ſecond of time, even from Sirius himſelf (the light of which does not exceed that of the ſmalleſt viſible fixed ſtar, in a greater proportion than that of about 3000 to 1), may not exceed 3000 or 4000, and from ſtars of the ſecond magnitude they may, therefore, probably not exceed 100. Now the apparent increaſe and diminution of the light, which we obſerve in the twinkling of the ſtars, ſeems to be repeated at not very unequal intervals, perhaps about 4 or 5 times in a ſecond. He therefore ſuppoſed, that the inequalities which naturally ariſe from the chance of the rays coming ſometimes a little denſer, and ſometimes a little rarer, in ſo ſmall a number of them as muſt fall upon the eye in the 4th or 5th part of a ſecond, may be ſufficient to account for this appearance. M. BOUGUER found, that a difference in the light of objects of one part in 66 was ſufficiently diſtinguiſhable.

61. It will perhaps, he ſays, be objected, that the rays coming from Sirius, are too numerous, to admit of a ſufficient inequality ariſing from the common effect of chance, ſo frequently as would be neceſſary to produce this effect, whatever might happen with reſpect to the ſmaller ſtars; but he obſerves, that, till we know what inequality is neceſſary to produce this effect, we can only gueſs at it one way or the other. Since theſe obſervations were publiſhed, Mr Michell has entertained ſome ſuſpicion, that the unequal denſity of light does not contribute to this effect in ſo great a degree as he had imagined, eſpecially in conſequence of obſerving that even Venus does ſometimes twinkle. This he once obſerved her to do remarkably when ſhe was about 60° high, though Jupiter, which was then about 16° high, and was ſenſibly leſs luminous, did not twinkle at all. If, notwithſtanding the great number of rays which, no doubt, come to the eye from ſuch a ſurface as this planet preſents, its appearance be liable to be affected in this manner, it muſt be owing to ſuch undulations in the atmoſphere, as will probably render the effect of every other cauſe altogether inſenſible. The conjecture, however, has ſo much probability in it, that it well deſerved to be recited.

62. M. MUSCHENBROEK ſuſpects that the twinkling of the ſtars ariſes from ſome affection of the eye, as well as the ſtate of the atmoſphere. For he ſays, that in Holland, when the weather is froſty, and the ſky very clear, the ſtars twinkle moſt manifeſtly to the naked eye, though not in teleſcopes; and ſince he does not ſuppoſe that there is any great exhalation, or dancing of the vapour at that time, he queſtions whether the vivacity of the light affecting the eye may not be concerned in the phenomenon. But he might very eaſily have ſatisfied himſelf with reſpect to this, by looking at the ſtars near the zenith, when the light traverſes but a ſmall part of the atmoſphere; for he would not have perceived them to twinkle near ſo much as they do near the horizon, when much more of their light is intercepted by the atmoſphere.

63. Some aſtronomers have lately endeavoured to explain the twinkling of the fixed ſtars by the extreme minuteneſs of their apparent diameter; ſo that they ſuppoſe the ſight of them is intercepted by every mote that floats in the air. But Mr MICHELL obſerves, that no object can hide a ſtar from us, that is not large enough to exceed the apparent diameter of the ſtar, by the diameter of the pupil of the eye: ſo that if a ſtar was a mathematical point, the interpoſing object muſt ſtill be equal

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in size to the pupil of the eye: nay, it must be large enough to hide the star from both eyes at the same time.

64. Besides a variation in the quantity of light, a momentary change of colour has likewise been observed in some of the fixed stars. Mr Melville says, that when one looks stedfastly at Sirius, or any bright star not much elevated above the horizon, its colour seems not to be constantly white, but appears tinctured at every twinkling with red and blue. This observation Mr Melville puts among his queries, with respect to which he could not entirely satisfy himself; and he observes, that the separation of colours by the refractive power of the atmosphere is, probably, too small to be perceived. But the supposition of Mr Michell above mentioned will pretty well account for this circumstance. For the red and blue rays being much fewer than those of the intermediate colours, and therefore much more liable to inequalities, from the common effect of chance, a small excess or defect in either of them will make a very sensible difference in the colour of the stars.

Sect. III. Discoveries *concerning the* Reflection *of* Light.

65. However much the ancients might have been mistaken with regard to the nature of light, we find that they were acquainted with two very important observations concerning it; viz. that light is propagated in right lines, and that the angle of incidence is equal to the angle of reflection. Who first made these important observations is not known. But, indeed, important as they are, and the foundation of a great part of even the present system of optics, the merit of the former discovery is the less, that the fact is obvious, and easily ascertained. As to the latter, that *the angle of incidence is equal to the angle of reflection*, it was probably first discovered by observing a ray of the sun reflected from the surface of water, or some other polished body; or from observing the images of objects reflected by such surfaces.

66. Aristotle was sensible that it is the reflection of light from the atmosphere which prevents total darkness after the sun sets, and in places where he doth not shine in the day time. He was also of opinion, that rainbows, haloes, and mock suns, were all occasioned by the reflection of the sun-beams in different circumstances, by which an imperfect image of his body was produced, the colour only being exhibited, and not his proper figure. The image, he says, is not single, as in a mirror; for each drop of rain is too small to reflect a visible image, but the conjunction of all the images is visible.

67. Without inquiring any farther into the nature of light or vision, the ancient geometricians contented themselves with deducing a system of optics from the two observations mentioned above. The treatise of optics ascribed to Euclid is employed about determining the apparent size and figure of objects, from the angle under which they appear, or which the extremities of them subtend at the eye, and the apparent place of the image of an object reflected from a polished mirror; which he fixes at the place where the reflected ray meets a perpendicular to the mirror drawn through the object. But this work is so inaccurately drawn up, that it is not generally believed to be Euclid's.

68. It appears from a circumstancce in the history of Socrates, that the effects of burning-glasses had also been observed by the ancients; and it is probable that the Romans had a method of lighting their sacred fire by means of a concave speculum. It seems indeed to have been known pretty early, that there is an increase of heat in the place where the rays of light meet, when they are reflected from a concave mirror. The burning power of concave mirrors is taken notice of by Euclid in the 2d book of the treatise above mentioned. If we credit what some ancient historians have written concerning the exploits of Archimedes, we shall be induced to think that he made great use of this principle, in constructing some very powerful burning mirrors. It is allowed, that this eminent geometrician did write a treatise on the subject of burning mirrors, though it be not now extant; having perished with most of his other works and inventions in the destruction of Syracuse.

69. J. B. Porta supposes that the burning mirrors of the ancients were of metal, in the form of a section of a parabola. It follows from the properties of this curve, that all the rays which fall upon it, parallel to its axis, will meet in the same point at the focus. Consequently, if the vertex of the parabola be cut off, as in *Fig.* 1. *Plate* CCXLIX, it will make a convenient burning mirror. In some drawings of this instrument the frustrum is so small, as to look like a ring. With an instrument of this kind, it is thought, that the Romans lighted their sacred fire. Some have also thought that this was the form of the mirror with which Archimedes burnt the Roman fleet, or by applying a smaller parabolic mirror for this purpose, as is represented *fig.* 2.

70. All this time, however, the nature of reflection was very far from being understood. Even lord Bacon, who made much greater advances in natural philosophy than his predecessors, and who pointed out the true method of improving it, was so far deceived with regard to the nature of reflection and refraction, that he supposed it possible to see the image reflected from a looking-glass, without seeing the glass itself; and to this purpose he quotes a story of friar Bacon, who is reported to have apparently walked in the air between two steeples, and which was thought to have been effected by reflection from glasses while he walked upon the ground.

71. The whole business of seeing images in the air may be traced up to Vitellio; and what he said upon the subject seems to have passed from writer to writer, with considerable additions to the time of lord Bacon. What Vitellio endeavours to show is, that it is possible, by means of a cylindrical convex speculum, to see the images of objects in the air, out of the speculum, when the objects themselves cannot be seen. But, if his description of the apparatus requisite for this experiment be attended to, it will be seen that the eye was to be directed towards the speculum, which was placed within a room, while both the object and the spectator were without it. But if he himself did make any trial with the apparatus that

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Plate CCXLIX.

Fig. 1.

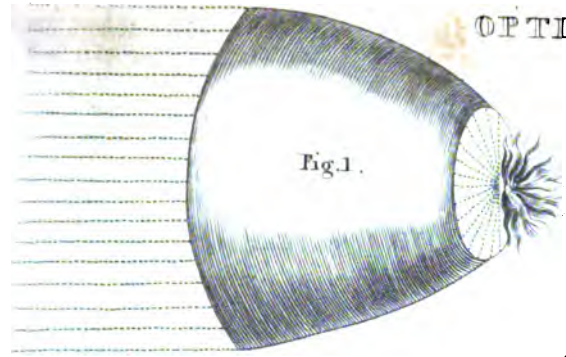


Fig. 2.

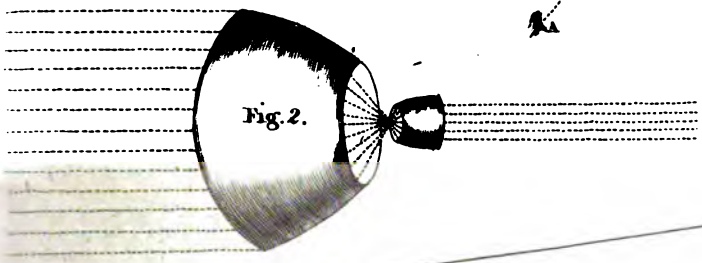


Fig. 3.

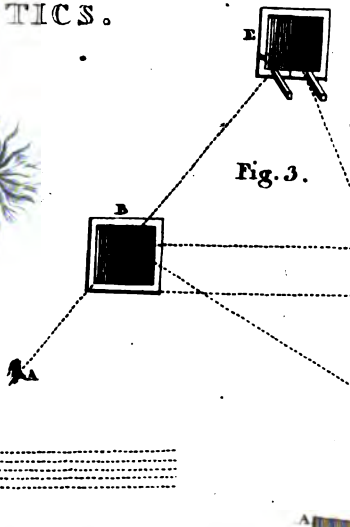


Fig. 13.

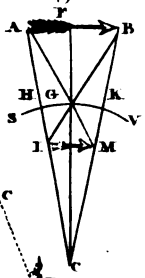


Fig. 7.

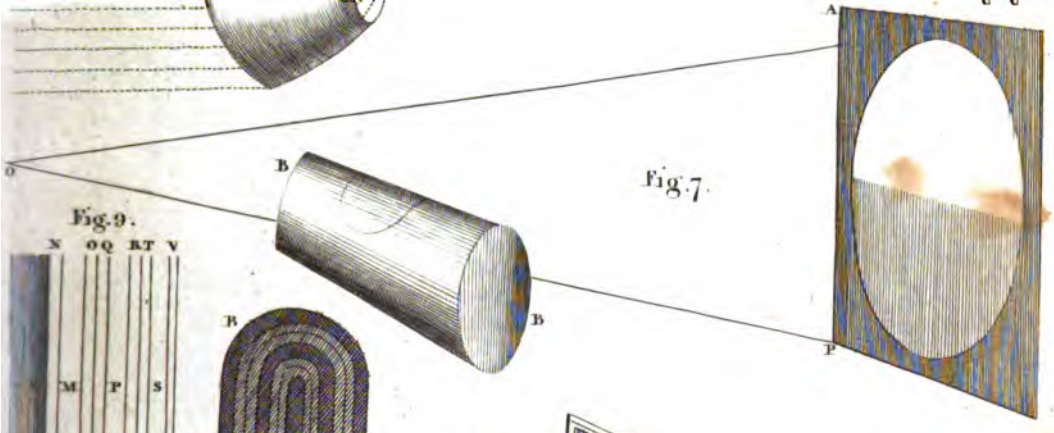


Fig. 9.

Fig. 11.

Fig. 5.

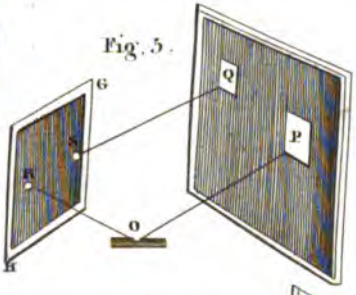


Fig. 6.

Fig. 4.

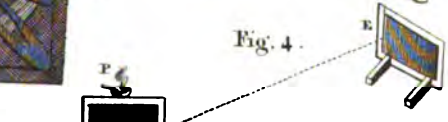


Fig. 10.

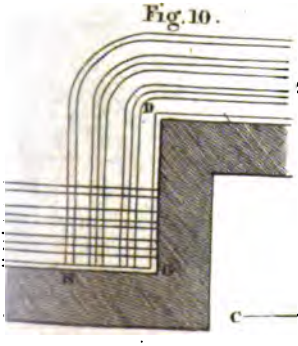


Fig. 8.

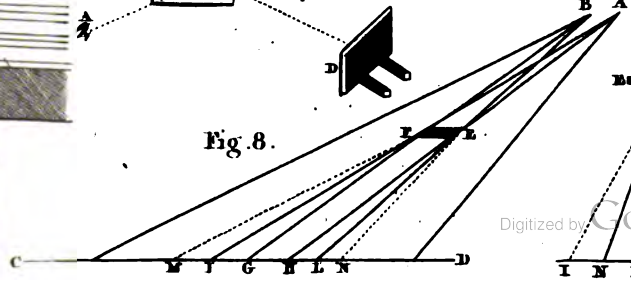
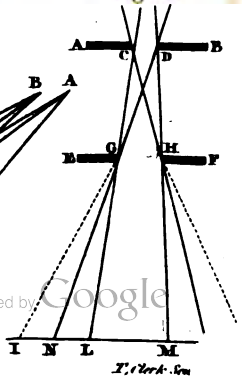


Fig. 12.



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that he deſcribes for this purpoſe, he muſt have been under ſome deception with reſpect to it.

72. B. Porta ſays, that this effect may be produced by a plane mirror only, and that an ingenious perſon may ſucceed in it; but his particular deſcription of a method to produce this extraordinary appearance is by a plane mirror and a concave one combined. KIRCHER alſo ſpeaks of the poſſibility of exhibiting theſe pendulous images, and ſuppoſes that they are reflected from the denſe air; and the moſt perfect and pleaſing deception depending upon the images in the air, is one of which this writer gives a particular account in his *Ars Magna Lucis et Umbræ*, p. 783. In this caſe the image is placed at the bottom of a hollow poliſhed cylinder, by which means it appears like a real ſolid ſubſtance, ſuſpended within the mouth of the veſſel. In this manner, he ſays, he once exhibited a repreſentation of the aſcenſion of Chriſt; when the images were ſo perfect, that the ſpectators could not be perſuaded, but by attempting to handle them, that they were not real ſubſtances.

73. Among other amuſing things that were either invented or improved by Kircher, was the method of throwing the appearance of letters, and other forms of things, into a darkened room from without, by means of a lens and a plane mirror. The figures or letters were written upon the face of the mirror, and inverted; and the focus of the lens was contrived to fall upon the ſcreen or wall that received their images. In this manner, he ſays, that with the light of the ſun he could throw a plain and diſtinct image 500 feet.

74. KEPLER firſt diſcovered the true reaſon of the apparent places of objects ſeen by reflecting mirrors, as it depends upon the angle which the rays of light, iſſuing from the extreme part of an object, make with one another after ſuch reflections. In plane mirrors, theſe rays are reflected with the ſame degree of inclination to one another that they had before their incidence; but he ſhows that this inclination is changed in convex and concave mirrors.

75. Mr BOYLE made ſome curious obſervations concerning the reflecting powers of differently coloured ſubſtances. Many learned men, he ſays, imagined that ſnow affects the eyes, not by a *borrowed*, but by a *native* light; but having placed a quantity of ſnow in a room from which all foreign light was excluded, neither he nor any body elſe was able to perceive it. To try whether white bodies reflect more light than others, he held a ſheet of white paper in a ſun-beam admitted into a darkened room, and obſerved that it reflected much more light than a paper of any other colour, a conſiderable part of the room being enlightened by it. To ſhow that white bodies reflect the rays outwards, he adds, that common burning-glaſſes will not of a long time burn or diſcolour white paper. When he was a boy, he ſays, it ſet him very early upon gueſſing at the nature of whiteneſs, eſpecially as he obſerved that the image of the ſun was not ſo well defined upon white paper as upon black; and as, when he put ink upon the paper, the moiſture would be quickly dried up, and the paper, which he could not burn before, would preſently take fire.

76. To ſatisfy himſelf ſtill farther with reſpect to this ſubject, he took a broad and large tile; and having made one half of its ſurface white and the other black, he expoſed it to the ſummer ſun; and he found, that while the whited part remained cool, the part that was black was grown very hot. He ſometimes left part of the tile of its native red; and, after expoſing the whole to the ſun, obſerved, that this part grew hotter than the white, but was not ſo hot as the black part. He alſo obſerved, that rooms hung with black are not only darker than they would otherwiſe be, but warmer too. A virtuoſo of unſuſpected credit acquainted him, that, in a hot climate, he had ſeen eggs well roaſted in a ſhort time, by firſt blackening the ſhells and then expoſing them to the ſun.

77. We have already taken notice of the remarkable property of lignum nephriticum firſt obſerved by Kircher. See GUILANDINA, N° 3. Mr Boyle deſcribes it to be a whitiſh kind of wood, brought from Mexico, which the natives call *coatl* or *tlapazatli*, and which had been thought to tinge water of a green colour only; but he found it to communicate all kinds of colours. If, ſays he, an infuſion of this wood be put into a glaſs globe, and expoſed to a ſtrong light, it will be as colourleſs as pure water; but if it be carried into a place a little ſhaded, it will be a moſt beautiful green. In a place ſtill more ſhaded, it will incline to red; and in a very ſhady place, or in an opaque veſſel, it will be green again. A cup of this remarkable wood was ſent to Kircher by the procurator of his ſociety at Mexico, and was preſented by him to the emperor as a great curioſity. It is called *lignum nephriticum*, becauſe the infuſion of it was imagined to be of ſervice in diſeaſes of the kidneys and bladder, and the natives of the country where it grows make uſe of it for that purpoſe.

78. Mr BOYLE corrected ſeveral haſty obſervations of KIRCHER concerning the colours that appear in the infuſion of lignum nephriticum, and he diverſified the experiments with it in a very pleaſing manner. He firſt diſtinctly noted the two very different colours which this remarkable tincture exhibits by tranſmitted and reflected light. If, ſays he, it be held directly between the light and the eye, it will appear tinged (excepting the very top of it, where a ſky-coloured circle ſometimes appears) almoſt of a golden colour, except the infuſion be too ſtrong; in which caſe it will be dark or reddiſh, and requires to be diluted with water. But if it be held from the light, ſo that the eye be between the light and the phial, it will appear of a deep lovely blue colour; as will alſo the drops, if any lie on the outſide of the glaſs. When a little of this tincture was poured upon a ſheet of white paper, and placed in a window where the ſun could ſhine upon it, he obſerved, that if he turned his back upon the ſun, the ſhadow of his pen, or any ſuch ſlender ſubſtance, projected upon the liquor, would not be all dark like other ſhadows; but that part of it would be curiouſly coloured, the edge of it next the body being almoſt of a lively golden colour, and the more remote part blue.

79. Suſpecting that the tinging particles abound-

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ed with salts, whose texture, and the colour thence arising, would probably be altered by acids, he poured into a small quantity of it a very little spirit of vinegar, and found that the blue colour immediately vanished, while the golden one remained, on whichever side it was viewed with respect to the light. Upon this he imagined, that as the acid salts of the vinegar had been able to deprive the liquor of its blue colour, a sulphureous salt, which is of contrary nature, would destroy their effects; and having placed himself betwixt the window and the phial, and let fall into the same liquor a few drops of oil of tartar *per deliquium*, he found that it was immediately restored to its former blue colour, and exhibited all the same phenomena which it had done at the first.

80. Having brought a round long-necked phial, filled with this tincture, into a darkened room, into which a beam of the sun was admitted by a small aperture; and holding the phial sometimes near the sun-beams, and sometimes partly in them and partly out of them, changing also the position of the glass, and viewing it from several parts of the room, it exhibited a much greater variety of colours than it did in an enlightened room. Besides the usual colours, it was red in some places and green in others, and within were intermediate colours produced by the different degrees and odd mixtures of light and shade. Mr Boyle observed the difference between reflected and transmitted light also in gold, though no person explained the cause of these effects before Sir Isaac Newton. He took a piece of leaf-gold, and holding it betwixt his eye and the light, observed that it did not appear of a golden colour, but of a greenish blue. He also observed the same change of colour by candle-light; but the experiment did not succeed with a leaf of silver.

81. The constitution of the atmosphere and of the sea, we find, by observations made in later periods, to be similar to that of this infusion; for the blue rays, and others of a faint colour, do not penetrate so far into them as the red, and others of a stronger colour: but what this constitution is, which is common to them all, deserves to be inquired into. For almost all other tinctures, and this of lignum nephriticum too, after some change made in it by Mr Boyle, as well as all other semi-transparent coloured substances, as glass, appear of the same hue in all positions of the eye. To increase or diminish the quantity makes no difference, but to make the colour deeper or more dilute.

82. The first distinct account of the colours exhibited by thin plates of various substances, are met with among the observations of Mr BOYLE. To show the chemists that colours may be made to appear to vanish, where there is no accession or change either of the sulphureous, the saline, or the mercurial principle of bodies, he observes, that all chemical essential oils, as well as good spirit of wine, being shaken till they rise in bubbles, appear of various colours, which immediately vanish when the bubbles burst; so that a colourless liquor may be made to exhibit a variety of colours, and lose them in a moment, without any change in its essential principles. He then mentions the colours that appear in bubbles of soap and water, and also in turpentine. He sometimes got glass blown so thin as to exhibit similar colours; and observes, that a feather, of a proper shape and size, and also a black ribbon, held at a proper distance between his eye and the sun, showed a variety of *little rainbows*, as he calls them, with very vivid colours, none of which were constantly to be seen in the same objects.

83. A much greater number of observations were made on this subject by Dr HOOKE. He promised, at a meeting of the society on the 7th of March 1672, to exhibit, at their next meeting, something which had neither *reflection* nor *refraction*, and yet was *diaphanous*. Accordingly he produced the famous coloured bubble of soap and water, of which such admirable use was afterwards made by Sir Isaac Newton, but which Dr Hooke and his contemporaries seem to have overlooked in Mr Boyle's treatise on colours, though it was published nine years before. By the help of a small glass pipe, there were blown several small bubbles, out of a mixture of soap and water; where, at first, they appeared white and clear; but, after some time, the film of water growing thinner, there appeared upon it all the colours of the rainbow: First a pale yellow; then orange, red, purple, blue, green, &c. with the same series of colours repeated; in which it was farther observable, that the first and last series were very faint, and that the middlemost was very bright. After these colours had passed over the changes above mentioned, the film of the bubble began to appear white again; and presently, in several parts of this second white film, there appeared several holes, which by degrees grew very big, several of them running into one another. Dr Hooke says it is strange, that though both the encompassing and encompassed air have surfaces, yet he could not observe that they afforded either reflection or refraction, which all the other parts of the encompassed air did. This experiment, he adds, at first sight, may appear very trivial; yet as to the finding out the nature and cause of reflection, refraction, colours, congruity and incongruity, and several other properties of bodies, he looked upon it as one of the most instructive. He adds, that that which gives one colour by reflection, gives another by trajection, like the tincture of lignum nephriticum.

84. Dr HOOKE was the first to observe, if not to describe, the beautiful colours that appear in thin plates of muscovy glass. These, he says, are very beautiful to the naked eye, but much more when viewed with a microscope. With this he could perceive that these colours were ranged in rings surrounding the white specks or flaws in this thin substance, that the order of the colours was the same as in the rainbow, and that they were often repeated ten times; but they were disposed as in the outer bow, and not the inner. Some of them were also much brighter and broader than others. He also observed, that if there was a place where the colours were very broad, and conspicuous to the naked eye, they might be made, by pressing the place with the finger, to change places, and move from one part to another. Lastly, he observed, that if great care be used, this substance may be split into plates of $\frac{1}{4}$ or $\frac{1}{5}$ of an inch in diameter, each of which will appear

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appear through a microscope to be uniformly adorned with some one vivid colour, and that these plates will be found to be of the same thickness throughout.

85. A fact similar to this, was observed previous to it. Lord Brereton, at a meeting of the Royal Society in 1666, produced some pieces of glass taken out of a window of a church, both on the N. and S. side of it; observing, that they were all eaten in by the air, but that the piece taken from the S. side had some colours like those of the rainbow upon it, which the others on the N. side had not. This phenomenon has been frequently observed since. It is not to be doubted, but in all these cases, the glass is divided into thin plates, which exhibit colours, upon the same principle with those which Dr Hooke observed in the bubble of soap and water, and in the thin plate of air, which has since been more fully explained by Sir Isaac Newton.

86. An observation, made by OTTO GUERICK, explains the reason why stars are visible at the bottom of a deep well. It is, says he, because the light that proceeds from them is not overpowered by the rays of the sun, which are lost in the number of reflections which they must undergo in the pit, so that they can never reach the eye of a spectator at the bottom of it.

87. But of all those who have given their attention to this subject, none seems to have given such satisfaction as M. BOUGUER; and next to those of Sir Isaac Newton, his labours seem to have been the most successful. The object of his curious and elaborate experiments was to measure the degrees of light, emitted, reflected, or refracted, by different bodies. They were originally occasioned by an article of M. MAIRAN's in the *Memoirs of the French Academy* for 1721, in which the proportion of the light of the sun at the two solstices was supposed to be known; and his laudable attempt to verify what had been before taken for granted, suggested a variety of new experiments, and opened to him and to the world a new field of optical knowledge. His first production upon this subject was a treatise entitled *Essai D'Optique*, which was received with general approbation. Afterwards he formed a plan of a much larger work, to which many more experiments were necessary: but he had hardly completed it when he died, in 1758: so that we are obliged to his friend M. DE LA CAILLE for the care of the publication. At length, however, it was printed at Paris in 1760, under the title of *Traité d'Optique*.

88. By his account of the variety, the singular accuracy and circumspection, with which he made his experiments, he must have guarded against every avenue to error, and particularly against those objections to which the few attempts that had been made, of a similar nature, before him had been liable. To compare different degrees of light, he always contrived to place the bodies from which it proceeded, or other bodies illuminated by them, in such a manner as that he could view them distinctly at the same time; and he either varied the distances of these bodies, or modified their light in some other way, till he could perceive no difference between them. Then, considering their different distances, he calculated the proportion which they would have borne to each other at the same distance, or in the same circumstances.

89. To ascertain the quantity of light lost by reflection, he placed the mirror, or reflecting surface B, *Plate* 249, *fig.* 3. on which the experiment was to be made, truly upright; and having taken two tablets, of precisely the same colour, or of an equal degree of whiteness, he placed them exactly parallel to one another at E and D, and threw light upon them by a lamp or candle, P, placed in a right line between them. He then placed himself so, that with his eye at A he could see the tablet E, and the image of the tablet D, reflected from the mirror B at the same time; making them, as it were, to touch one another. He then moved the candle along the line ED, so as to throw more or less light upon either of them, till he could perceive no difference in the strength of the light that came to his eye from them. After this, he measured the distances EP and DP; for the squares of those distances expressed the degree in which the reflection of the mirror diminished the quantity of light. It is evident, that if the mirror reflected all the rays it received, the candle P must have been placed at C, at an equal distance from each of the tablets, in order to make them appear equally illuminated; but because much of the light is lost in reflection, they can only be made to appear equally bright by placing the candle nearer the tablet D, which is seen by reflection only.

90. To find how much light is lost by oblique reflection, he took two equally polished plates, D and E, *Fig.* 4. and caused them to be enlightened by the candle P; and while one of them, D, was seen at A, by reflection from B, placed in a position oblique to the eye, the other, E, was so placed, as to appear contiguous to it; and removing the plate E, till the light which it reflected was no stronger than that which came from the image D, seen by reflection at B, he estimated the quantity of light that was lost by this oblique reflection, by the squares of the distances of the two objects from the candle. In these experiments all foreign light was excluded, his eye was shaded, and every other precaution was observed to make his conclusions unquestionable.

91. To ascertain the quantity of light lost by reflection with the greatest exactness, M. Bouguer introduced two beams of light into a darkened room, as by the apertures P and Q, *fig.* 5; which he had so contrived, that he could place them higher or lower, and enlarge or contract them at pleasure; and the reflecting surface (as that of a fluid contained in a vessel) was placed horizontally at O, whence the light coming through the hole P, was reflected to R, upon the screen GH, where it was compared with another beam of light that fell upon S, through the hole Q; which he made so much less than P, as the spaces S and R were equally illuminated; and by the proportion that the apertures P and Q bore to each other, he calculated what quantity of light was lost by the reflection at O. It was necessary, he says, that the two beams of light PO and QS (which he usually made 7 or 8 feet long) should be exactly parallel, that they might come from two points of the sky equally elevated above the horizon, and having

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having precisely the same intensity of light. It was also necessary that the hole Q should be a little higher than P, in order that the two images should be at the same height, and near one another: and that the screen GH be exactly vertical, in order that the direct and reflected beams may fall upon it with the same inclination; since, otherwise, though the two lights were perfectly equal, they would not illuminate the screen equally. This disposition serves to answer another important condition in these experiments; for the direct ray QS must be of the same length with the sum of the incident and reflected rays PO and OR, that the quantity of light introduced into the room may be sensibly proportional to the sizes of the apertures.

92. Before we recite the result of his experiments to measure the quantity of light lost by reflection, it is proper to mention some which were made previous to them on the diminution of light by reflection, and the transmission of it to considerable distances through the air, by Buffon, when he was constructing his machine to burn at great distances. See Burning-Glass, § 16. Receiving the light of the sun in a dark place, and comparing it with the same light of the sun reflected by a mirror, he found, that at small distances, as 4 or 5 feet, about one half was lost by reflection; as he judged by throwing two reflected beams upon the same place, and comparing them with a beam of direct light; for then the intensity of them both seemed to be the same. Having received the light at greater distances, as at 100, 200, and 300 feet, he could hardly perceive that it lost any of its intensity by being transmitted through such a space of air. He afterwards made the same experiments with candles, thus: He placed himself opposite to a looking-glass, with a book in his hand, in a room perfectly dark; and having one candle lighted in the next room, at the distance of about 40 feet, he had it brought nearer to him by degrees, till he was just able to distinguish the letters of the book, which was then 24 feet from the candle. He then received the light of the candle, reflected by the looking-glass, upon his book, carefully excluding all the light that was reflected from any thing else; and he found that the distance of the book from the candle, including the distance from the book to the looking-glass (which was only half a foot) was in all 15 feet. He repeated the experiment several times, and always with nearly the same result; and therefore concluded, that the quantity of direct light is to that of reflected as 576 to 225; so that the light of five candles reflected from a plane mirror is about equal to that of two candles. From these experiments it appeared, that more light was lost by reflection of the candles than of the sun, which M. Buffon thought was owing to this circumstance, that the light issuing from the candles diverges, and therefore falls more obliquely upon the mirror than the light of the sun, the rays of which are nearly parallel.

93. The experiments and observations of Count Buffon are curious; though they fall far short of those of M. Bouguer. We shall begin with those which he made to ascertain the difference in the quantity of light reflected by glass and polished metal. Using a smooth piece of glass one line in thickness, he found, that when it was placed at an angle of 15° with the incident rays, it reflected 628 parts of 1000 which fell upon it; at the same time that a metallic mirror, which he tried in the same circumstances, reflected only 561 of them. At a less angle of incidence much more light was reflected; so that at an angle of 3° the glass reflected 700 parts, and the metal something less. Trying the reflection of bodies that were not polished, he found that a piece of white plaster, at an angle of 75° with the incident rays, reflected $\frac{1}{19}$ part of the light that it received from a candle 9 inches from it. White paper reflected in the same proportion; but at 3 inches, they both reflected 150 parts of 1000 that were incident. Proceeding to make farther observations on reflected light, he premises the two following theorems:

94. I. When the luminous body is at an infinite distance, and its light is received by a globe, the surface of which has a perfect polish, and absorbs no light, it reflects the light equally in all directions, provided it be received at a considerable distance. He only excepts the place where the shadow of the globe falls: but this, he says, is no more than a single point, with respect to the immensity of the spherical surface which receives its light.

95. II. The quantity of light reflected in one certain direction will always be exactly the same, whether it be reflected by a very great number of small polished hemispheres, by a less number of larger hemispheres, or by a single hemisphere, provided they occupy the same base, or cover the same ground plan.

96. The use he proposes to make of these theorems is, to assist him in distinguishing whether the light reflected from bodies be owing to the extinction of it within them, or whether the roughness or eminences which cover them have not the same effect with the small polished hemispheres above mentioned. He begins with observing, that, of the light reflected from mercury, $\frac{1}{4}$ at least is lost, and that probably no substances reflect more than this. The rays were received at an angle of $11\frac{1}{2}$ degrees of incidence, that is measured from the surface of the reflecting body, and not from the perpendicular, which, he says, is what we are from this place to understand whenever he mentions the angle of incidence.

97. The most striking observations he made relate to the very great difference in the quantity of light reflected at different angles of incidence. In general, he says, that reflection is stronger at small angles of incidence, and weaker at large ones. The difference is excessive when the rays strike the surface of transparent substances, with different degrees of obliquity; but it is almost as great in some opaque substances, and it was always more or less so in every thing that he tried. He found the greatest inequality in black marble; in which he was astonished to find, that, with an angle of 3° 35′ of incidenee, though not perfectly polished, yet it reflected almost as well as quicksilver. Of 1000 rays which it received, it returned 600; but when the angle of incidence was 14°, it reflected only 156; when it was 30°, it reflected 51; and when it was 80°, it reflected only 23. Similar experiments made with metallic mirrors always

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always gave the differences much less considerable. The greatest was hardly ever an 8th or a 9th part of it, but they were always in the same way.

98. The great difference between the quantity of light reflected from the surface of water, at different angles of incidence, is truly surprising; but our author observes, that this difference was greater when the smallest inclinations were compared with those which were near to a right angle. In very small angles, water reflects nearly $\frac{1}{2}$ of the direct light. In still weather, on the brink of a lake opposite to the sun, the reflected light is $\frac{1}{3}$, $\frac{1}{4}$, or sometimes a greater proportion: The direct light of the sun diminishes gradually as it approaches the horizon, while the reflected light at the same time grows stronger: so that there is a certain elevation of the sun, in which the united force of the direct and reflected light will be the greatest possible, and this he says is 12° or 13°. On the other hand, the light reflected from water at great angles of incidence is extremely small. When the light was perpendicular, it reflected no more than the 37th part that quicksilver does in the same circumstances; for it did not appear, from all his observations, that water reflects more than the 60th or 55th part of perpendicular light. When the angle of incidence was 50°, the light reflected from the surface of water was about the 32 part of that which mercury reflected; and as the reflection from water increases with the diminution of the angle of incidence, it was twice as strong in proportion at 39°; for it was then the 16th part of the quantity that mercury reflected.

99. Partly by observation and partly by calculation, he drew up the following table of the quantity of light reflected from the surface of water (which he pitched upon as the most commodious fluid), at different angles with the surface.

Angles of incidence.	Rays reflected of 1000.	Angles of incidence.	Rays reflected of 1000.
$\frac{1}{2}$	721	$17\frac{1}{2}$	178
1	692	20	145
$1\frac{1}{2}$	669	25	97
2	639	30	65
$2\frac{1}{2}$	614	40	34
5	501	50	22
$7\frac{1}{2}$	409	60	19
10	333	70	18
$12\frac{1}{2}$	271	80	18
15	211	90	18

100. In the same manner, he drew up the following table of the quantity of light reflected from the looking-glass not quicksilvered.

Angles of incidence.	Rays reflected of 1000	Angles of incidence.	Rays reflected of 1000.
$2\frac{1}{2}$	584	30	112
5	543	40	57
$7\frac{1}{2}$	474	50	34
10	412	60	27
$12\frac{1}{2}$	356	70	25
15	299	80	25
20	222	90	25
25	157		

101. Upon pouring a quantity of water into a vessel containing quicksilver, there will be two images of any objects seen by reflection from them, one at the surface of the water, and the other at that of the quicksilver. In the largest angles of incidence, the image at the surface of the water will disappear, when it is about a 60th or 80th part less luminous than the image at the surface of the quicksilver. Depressing the eye, the image on the water will grow stronger, and that on the quicksilver weaker in proportion; till at last the latter will be incomparably weaker than the former, and at an angle of about 10° they will be equally luminous. According to the table, $\frac{111}{1000}$ of the incident rays are reflected from the water at this angle of 10 degrees. At the surface of the mercury they were reduced to 500; and of these, part being reflected back upon it from the under surface of the water, only 333 remained to make the image from the mercury.

102. It has been observed by Mr EDWARDS and others (see *Phil. Transf.* vol. 53, p. 229), that there is a remarkably strong reflection into water, with respect to rays issuing from the water; and persons under water have seen images of things in the air in a manner peculiarly distinct and beautiful: but this fact had not been observed with a sufficient degree of attention, till M. BOUGUER did it. In this case, he says, that from the smallest angles of incidence to a certain number of degrees, the greatest part of the rays are reflected, perhaps in as great a proportion as at the surface of metallic mirrors, or of quicksilver; while the other part, which does not escape into the air, is extinguished or absorbed; so that the surface of the transparent body appears opaque on the inside. If the angle of incidence be increased only a few degrees, the strong reflection ceases altogether, a great number of rays escape into the air, and very few are absorbed or extinguished. In proportion as the angle of incidence is farther increased, the quantity of the light reflected becomes less and less; and when it is near 90°, almost all the rays escape out of the transparent body, its surface losing almost all its power of reflection, and becoming almost as transparent as in other cases, or when the light falls upon it from without. The property belonging to the surfaces of transparent bodies, of absorbing or extinguishing the rays of light, is truly remarkable, and had not been noticed by any person before M. Bouguer. It had been conjectured by Sir Isaac Newton, that rays of light become extinct only by impinging upon the solid parts of bodies; but these observations of M. Bouguer show that the fact is quite otherwise, and that this effect is to be attributed, not to the solid parts of bodies, but to some power lodged at the surfaces of bodies only, and therefore probably the same with that which reflects, refracts, and inflects the light.

103. One of the above-mentioned observations, viz. all the light being reflected at certain angles of incidence, from air into denser substances, had frequently been made, especially in glass prisms; so that Sir Isaac Newton made use of one of them, instead of a reflecting mirror, in the construction of his telescope. If a beam of light fall upon the air from within these prisms, at an angle of

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of 10°, 20°, or 30°, the effect will be nearly the same as at the surface of quickfilver, $\frac{1}{4}$ or $\frac{1}{5}$ of the rays being extinguiſhed, and $\frac{3}{4}$ or $\frac{4}{5}$ reflected. This property retains its full force as far as an incidence of 49° 49′ (ſuppoſing the proportion of the ſines of refraction to be 31 and 20 for the mean refrangible rays); but if the angle of incidence be increaſed but one degree, the quantity of light reflected inwards decreaſes ſuddenly, and a great part of the rays eſcape out of the glaſs, ſo that the ſurface becomes ſuddenly tranſparent. All tranſparent bodies have the ſame property, with this difference, that the angle of incidence at which the ſtrong reflection ceaſes, and at which the light which is not reflected is extinguiſhed, is greater in ſome than in others. In water this angle is about 41° 32′; and in every medium it depends ſo much on the invariable proportion of the ſine of the angle of refraction to the ſine of the angle of incidence, that this law alone is ſufficient to determine all the phenomena of this new circumſtance, at leaſt as to this accidental opacity of the ſurface.

104. When our author proceeded to meaſure the quantity of light reflected by theſe internal ſurfaces at great angles of incidence, he found many difficulties, eſpecially on account of the many alterations which the light underwent before it came to his eye: but at length, uſing a plate of cryſtal, he found, that, at an angle of 75°, this internal reflection diminiſhed the light 27 or 28 times; and as the external reflection at the ſame angle diminiſhed the light only 26 times, it follows that the internal reflection is a little ſtronger than the other. The image reflected internally was always a little redder than an object which was ſeen directly through the plate of cryſtal.

105. Reſuming his obſervations on the diminution of light, occaſioned by the reflection of opaque bodies obliquely ſituated, he compared it with the appearances of ſimilar ſubſtances which reflected the light perpendicularly. Uſing pieces of ſilver made very white, he found, that, when one of them was placed at an angle of 75° with reſpect to the light, it reflected only 640 parts out of 1000. He then varied the angle, and alſo uſed white plaſter and fine Dutch paper, and drew up the following table of the proportion of the light reflected from each of thoſe ſubſtances at certain angles:

106. QUANTITY of LIGHT reflected from

Angles of incidence.	Silver.	Plaſter.	Dutch Paper.
90	1000	1000	1000
75	802	762	971
60	640	640	743
45	455	529	507
30	319	352	332
15	209	194	203

107. Suppoſing the aſperities of opaque bodies to conſiſt of very ſmall planes, it appears from theſe obſervations, that there are fewer of them in thoſe bodies which reflect the light at ſmall angles of incidence than at greater; and our author ſays, that the caſe was nearly the ſame with reſpect to all the opaque bodies that he tried. None of them had their roughneſs equivalent to ſmall hemiſpheres, which would have diſperſed the light equally in all directions; and, from the *data* in the preceding table, he deduces mathematically the number of the little planes that compoſe thoſe ſurfaces, and that are inclined to the general ſurface at the angles above-mentioned, ſuppoſing that the whole ſurface contains 1000 of them that are parallel to itſelf, ſo as to reflect the light perpendicularly, when the luminous body is ſituated at right angles with reſpect to it.

108. His concluſions reduced to a table, correſponding to the preceding, are as follow:

Inclinations of the ſmall ſurfaces with reſpect to the large one.	The diſtribution of the ſmall planes that conſtitute the aſperities of the opaque ſurface in the		
	Silver.	Plaſter.	Paper.
0	1000	1000	1000
15	777	736	937
30	554	554	545
45	333	374	358
60	161	176	166
75	53	50	52

109. Theſe variations in the number of little planes, or ſurfaces, he expreſſes in the form of a curve; and afterwards ſhows, geometrically, what would be the effect if the bodies were enlightened in one direction, and viewed in another; upon which ſubject he has ſeveral curious theorems and problems: as, the poſition of the eye being given, to find the angle at which the luminous body muſt be placed, in order to its reflecting the moſt light; or, the ſituation of the luminous body being given, to find a proper ſituation for the eye, in order to ſee it the moſt enlightened, &c. But it would carry us too far into geometry to follow him through all theſe diſquiſitions.

110. Our geometrician next proceeds to aſcertain the quantity of ſurface occupied by the ſmall planes of each particular inclination, from conſidering the quantity of light reflected by each, allowing thoſe that have a greater inclination to the common ſurface to take up proportionably leſs ſpace than thoſe which are parallel to it. And comparing the quantity of light that would be reflected by ſmall planes thus diſpoſed, with the quantity of light that was actually reflected by the three ſubſtances above-mentioned, he found, that plaſter, notwithſtanding its extreme whiteneſs, abſorbs much light; for that, of 1000 rays that fall upon it, of which 166 or 167 ought to be reflected at an angle of 77°, only 67 are in fact returned; ſo that 100 out of 167 were extinguiſhed, that is, about three 5ths. With reſpect to the planets, our author concludes, that of 300,000 rays which the MOON receives, 172,000 are abſorbed, or perhaps 204,100.

111. Having conſidered the ſurfaces of bodies as conſiſting of planes only, he thus explains himſelf:—Each ſmall ſurface, ſeparately taken, is extremely irregular, and ſome of them are really concave, and others convex; but, in reducing them to a middle ſtate, they are to be conſidered as planes. Nevertheleſs he conſiders them as

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planes

planes only with respect to the reception of the rays; for as they are almost all curves, and as, besides this many of those, whose situation is different from others, contribute to the same effect, the rays always issue from an actual or imaginary focus, and after reflection always diverge from another. If it be asked, what becomes of those rays that are reflected from one asperity to another? he shows that very few of the rays can be in those circumstances; since they must fall upon planes which have more than 45° obliquity to the surface, of which there are very few in natural bodies.

112. Mr MELVILLE has made some ingenious observations on the manner in which bodies are *heated by light*. He observes, that, as each colorific particle of an opaque body must be somewhat moved by the reaction of the particles of light, when it is reflected backwards and forwards between the same particles, it is manifest that they must likewise be agitated with a vibratory motion, and the time of a vibration will be equal to that which light takes up in moving from one particle of a body to another adjoining. This distance, in the most solid opaque bodies, cannot be supposed greater than $\frac{1}{1250}$th of an inch, which space a particle of light describes in the $\frac{1}{1250000000000}$th of a second. With so rapid a motion, therefore, may the internal parts of bodies be agitated by the influence of light, as to perform 125,000,000,000,000 vibrations, or more, in a second of time.

113. Since there is no reflection of light but at the surface of a medium, he observes, that the greatest quantity of rays, though crowded into the smallest space, will not of themselves produce any heat. Hence it follows, that the portion of air which lies in the focus of the most potent speculum, is not at all affected by the passage of light through it, but continues of the same temperature with the ambient air; though any opaque body, or even any transparent body denser than air, when put in the same place, would be intensely heated in an instant. This consequence, evidently flowing from the most certain principles, not seeming to have been understood by many philosophers, he thought it proper to say something in explication of it. He observes, that the easiest way to be satisfied of the matter experimentally is, to hold a hair, or a piece of down, immediately above the focus of a lens or speculum, or to blow a stream of smoke from a pipe horizontally over it; for if the air in the focus were hotter than the surrounding fluid, it would continually ascend upon account of its rarefaction, and thereby sensibly agitate those slender bodies. Or a lens may be so placed as to form its focus within a body of water, or some other transparent substance, the heat of which may be examined from time to time with a thermometer; but care must be taken, in this experiment, to hold the lens as near as possible to the transparent body, lest the rays, by falling closer than ordinary on its surface, should warm it more than the common sun-beams.

114. To apply these observations to the natural phenomena, he observes, that the atmosphere is not much warmed by the passage of the sun's light through it, but chiefly by its contact with the heated surface of the globe. This, he thought, furnished one very simple and plausible reason why it is coldest in all climates on the tops of very high mountains; namely, because they are removed to the greatest distance from the general surface of the earth. For it is well known, that a fluid heated by its contact with a solid body, decreases in heat in an inverse proportion to the distance from the body. He found, by repeated trials, that the heat of water in deep lakes decreases regularly from the surface downwards. But to have this question fully determined, the temperature of the air in the valley and on the mountain's top must be observed every hour, both night and day, and carefully compared together. From this doctrine he supposes, that the heat produced by a given number of rays, in an opaque body of given magnitude, must be greater when the rays are more inclined to one another, than when they are less so; for the direction of the vibrations raised by the action of the light, whether in the colorific particles, or those of an inferior order, will more interfere with one another; whence the intestine shocks and collisions must increase. Besides, the colorific particles of opaque bodies being disposed in various situations, the rays will fall more directly on each, the more they are inclined to one another.

115. The attempts of Abbe NOLLET to fire inflammable substances by the power of the solar rays collected in the foci of burning mirrors, have a near relation to the present subject. Considering the great power of burning mirrors and lenses, it will appear surprising that this celebrated experimental philosopher should not be able to fire any liquid substance. But though he made the trial with all the care imaginable on the 19th Feb. 1757, he was not able to do it either with spirit of wine, olive-oil, oil of turpentine, or æther; and though he could fire sulphur, yet he could not succeed with Spanish-wax, rosin, black pitch, or suet. He both threw the focus of these mirrors upon the substances themselves, and also upon the fumes that rose from them; but all the effect was, that the liquor boiled, and was dispersed in vapours or very small drops, but would not take fire. When linen rags, and other solid substances, were moistened with any of these inflammable liquids, they would not take fire till the liquid was dispersed in a copious fume; so that rags thus prepared were longer in burning than those that were dry.

116. M. BEAUMÉ, who assisted M. Nollet in some of these experiments, observed farther, that the same substances which were easily fired by the flame of burning bodies, could not be set on fire by the contact of the hottest bodies that did not actually flame. Neither æther nor spirit of wine could be fired with a hot coal, or even red-hot iron, unless they were of a white heat. From these experiments our author concludes, that, supposing the electric matter to be the same with fire or light, it must fire spirit of wine by means of some other principle. The members of the academy Del Cimento had very early attempted to fire several of these substances, though without success. The Abbe read an account of his experiments to the Royal Academy at Paris seve-

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ral years before he attended to what had been done by the Italian philoſophers.

117. By the help of optical principles, and eſpecially by obſervations on the reflection of light, Mr Melville diſcovered that bodies which ſeem to touch one another are not always in actual contact. "It is common (ſays he) to admire the volubility and luſtre of drops of rain that lie on the leaves of colewort, and ſome other vegetables;" but no philoſopher had explained this curious phenomenon. Upon inſpecting them narrowly, he found that the luſtre of the drop is produced by a copious reflection of light from the flattened part of its ſurface contiguous to the plant; and that, when the drop rolls along a part which has been wetted, it immediately loſes all its luſtre, the green plant being then ſeen clearly through it; whereas, in the other caſe, it is hardly to be diſcerned. From theſe two obſervations, he concluded, that the drop does not really touch the plant, when it has the mercurial appearance, but is ſuſpended in the air at ſome diſtance from it by the force of a repulſive power; for there could not be any copious reflection of white light from its under ſurface, unleſs there were a real interval between it and the ſurface of the plant. If that ſurface were perfectly ſmooth, the under ſurface of the drop would be ſo likewiſe, and would therefore ſhow an image of the illuminating body by reflection, like a piece of poliſhed ſilver; but as it is conſiderably rough and unequal, the under ſurface becomes rough likewiſe, and ſo, by reflecting the light copiouſly in different directions, aſſumes the reſplendent white colour of unpoliſhed ſilver. It being thus proved by an optical argument, that the drop is not really in contact with the plant which ſupports it, it may eaſily be conceived whence its volubility ariſes, and why it leaves no moiſture where it rolls.

118. Baron Alexander Funk, viſiting ſome ſilver mines in Sweden, obſerved, that, in a clear day, it was as dark as pitch underground in the eye of a pit, at 60 or 70 fathoms deep; whereas, in a cloudy or rainy day, he could even ſee to read at 106 fathoms deep. Inquiring of the miners, he was informed that this is always the caſe; and, reflecting upon it, he imagined that it aroſe from this circumſtance, that when the atmoſphere is full of clouds, light is reflected from them into the pit in all directions, and that thereby a conſiderable proportion of the rays are reflected perpendicularly upon the earth; whereas, when the atmoſphere is clear, there are no opaque bodies to reflect the light in this manner, at leaſt in a ſufficient quantity; and rays from the ſun itſelf can never fall perpendicularly in that country. The other was that of the ingenious Mr Grey, who makes ſuch a figure in the hiſtory of electricity. This gentleman took a piece of ſtiff brown paper, and pricking a ſmall hole in it, he held it at a little diſtance before him; when, applying a needle to his eye, he was ſurpriſed to ſee the point of it inverted. The nearer the needle was to the hole, the more it was magnified, but the leſs diſtinct; and if it was ſo held, as that its image was near the edge of the hole, its point ſeemed crooked. From theſe appearances he concluded, that theſe ſmall holes, or ſomething in them, produce the effects of concave ſpeculums; and from this circumſtance he took the liberty to call them *aerial ſpeculums*.

Sect. IV. Diſcoveries *concerning the* Inflection *of* Light.

119. This property of light was not diſcovered till about the middle of the 17th century. The perſon who firſt made the diſcovery was F. Grimaldi; at leaſt he firſt publiſhed an account of it in his treatiſe *De lumine, coloribus, et iridibus*, printed in 1666. Dr Hooke, however, laid claim to the ſame diſcovery, though he did not publiſh his obſervations till ſix years after Grimaldi.

120. Dr Hooke having made his room completely dark, admitted into it a beam of the ſun's light by a very ſmall hole in a braſs plate fixed in the window-ſhutter. This beam ſpreading itſelf, formed a cone, the apex of which was in the hole, and the baſe was on a paper, ſo placed as to receive it at ſome diſtance. In this image of the ſun, thus painted on the paper, he obſerved that the middle was much brighter than the edges, and that there was a kind of dark penumbra about it, of about a 16th part of the diameter of the circle; which penumbra, he ſays, muſt be aſcribed to a property of light, which he promiſed to explain.—Having obſerved this, at the diſtance of about two inches from the former, he let in another cone of light; and receiving the baſes of them, at ſuch a diſtance from the holes as that the circles interſected each other, he obſerved that there was not only a penumbra, or darker ring, encompaſſing the lighter circle, but a manifeſt dark line, or circle, which appeared even where the limb of the one interfered with that of the other. This appearance is diſtinctly repreſented, *fig.* 6. *plate* 249.

121. Comparing the diameter of this baſe with its diſtance from the hole, he found it to be by no means the ſame as it would have been, if it had been formed by ſtraight lines drawn from the extremities of the ſun's diſk, but varied with the ſize of the holes, and the diſtance of the paper. Struck with this appearance, he proceeded to make farther experiments concerning the nature of light thus tranſmitted. To give a juſt idea of which, he held an opaque body BB, *fig.* 7. ſo as to intercept the light that entered at a hole in the window ſhutter O, and was received on the ſcreen AP. In theſe circumſtances, he obſerved, that the ſhadow of the opaque body (which was a round piece of wood, not bright or poliſhed) was all over ſomewhat enlightened, but more eſpecially towards the edge. Some perſons who were preſent, imagining that this light within the ſhadow might be produced by ſome kind of reflection from the ſide of this opaque body, on account of its roundneſs; and others ſuppoſing it might proceed from ſome reflection from the ſides of the hole in the piece of braſs, through which the light was admitted into the room; to obviate both theſe objections, he admitted the light through a hole burnt in a piece of paſte board, and intercepted it with a razor which had a very ſharp edge; but ſtill the appearances were the very ſame as before.

122. He diverſified this experiment, by placing the razor ſo as to divide the cone of light into two parts, the hole in the ſhutter remaining as before, and

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and placing the paper ſo as that none of the enlightened part of the circle fell upon it, but only the ſhadow of the razor; and to his ſurpriſe he ſaw what he calls *a very briſk and viſible radiation* ſtriking down upon the paper, of the ſame breadth with the diameter of the lucid circle. It always ſtruck perpendicularly from the line of ſhadow, and, like the tail of a comet, extended more than 10 or probably 100 times the breadth of the remaining part of the circle: nay, as far as he could find, by many trials, the light from the edge ſtruck downwards into the ſhadow very near to a quadrant. Wherever there was part of the interpoſed body higher than the reſt, oppoſite to it, the radiation of light into the ſhadow was brighter, as in the figure; and wherever there was a notch or gap in it, there was a dark ſtroke in the half-enlightened ſhadow. From all theſe appearances, he concluded, that they were to be aſcribed to a new property of light, whereby it is deflected from ſtraight lines, contrary to what had been before aſſerted by optical writers. It does not appear, however, that the Dr ever proſecuted this experiment; as all that we find of his on the ſubject, after this time, are ſome crude thoughts which he read at a meeting of the Royal Society; on the 18th of March 1675, conſiſting of 8 articles, viz. 1. There is a deflection of light, differing both from reflection and refraction, and ſeeming to depend on the unequal denſity of the conſtituent parts of the ray, whereby the light is diſperſed from the place of condenſation, and rarefied, or gradually diverged into a quadrant. 2. This deflection is made towards the ſuperficies of the opaque body perpendicularly. 3. Thoſe parts of the diverged radiations which are deflected by the greateſt angle from the ſtraight or direct radiations are the fainteſt, and thoſe that are deflected by the leaſt angles are the ſtrongeſt. 4. Rays cutting each other in one common foramen do not make the angles at the vertex equal. 5. Colours may be made without refraction. 6. The diameter of the ſun cannot be truly taken with common ſights. 7. The ſame rays of light, falling upon the ſame point of an object, will turn into all ſorts of colours, by the various inclinations of the object. 8. Colours begin to appear when two pulſes of light are blended ſo well, and ſo near together, that the ſenſe takes them for one.

123. We proceed to the diſcoveries of F. GRIMALDI. Having introduced a ray of light, through a very ſmall hole, (AB, *fig.* 8. *Pl.* 249.) into a darkened room, he obſerved that the light was diffuſed in the form of a cone, the baſe of which was CD; and that if any opaque body, FE, was placed in this cone of light, at a conſiderable diſtance from the hole, and the ſhadow was received upon a piece of white paper, the boundaries of it were not confined within GH, or the penumbra IL, occaſioned by the light proceeding from different parts of the aperture, and of the diſk of the ſun, but extended to MN; at which he was ſurpriſed, ſuſpecting, and finding by calculation, that it was conſiderably broader than it could have been made by rays paſſing in right lines by the edges of the object. But the moſt remarkable circumſtance in this appearance was, that upon the lucid part of the baſe, CM and ND, ſtreaks of coloured light were plainly diſtinguiſhed, each being terminated by blue on the ſide next to the ſhadow, and by red on the other; and though theſe coloured ſtreaks depended, in ſome meaſure, on the ſize of the aperture AB, becauſe they could not be made to appear if it was large, yet he found that they were not limited, either by it, or by the diameter of the ſun's diſk. Theſe coloured ſtreaks were not all of the ſame breadth, but grew narrower as they receded from the ſhadow, and were each of them broader the farther the ſhadow was received from the opaque body, and alſo the more obliquely the paper on which they were received was held with reſpect to it. He never obſerved more than three of theſe ſtreaks.

124. To give a clearer idea of theſe coloured ſtreaks, he drew the repreſentation of them, exhibited in *fig.* 9. in which NMO repreſents the broadeſt and moſt luminous ſtreak, next to the dark ſhadow X. In the ſpace in which M is placed there was no diſtinction of colour, but the ſpace NN was blue, and the ſpace OO, on the other ſide of it, was red. The 2d ſtreak QPR was narrower than the former; and of the 3 parts of which it conſiſted, the ſpace P had no particular colour, but QQ was a faint blue, and RR a faint red. The 3d ſtreak, TSV, was exactly ſimilar to the two others, but narrower than either of them, and the colours ſtill fainter. Theſe coloured ſtreaks lay parallel to the ſhadow of the opaque body; but when it was of an angular form, they did not make the ſame acute angles, but were bent into a curve, the outermoſt being rounder than thoſe that were next the ſhadow, as in *fig.* 10. If it was an inward angle, as DGH, the coloured ſtreaks, parallel to each other, of the two ſides croſſed without obliterating one another; only the colours were thereby rendered either more intenſe or mixed. The light that formed theſe coloured ſtreaks muſt have been bent from the body; but this attentive obſerver has likewiſe given an account of other appearances, which muſt have been produced by the light bending towards the body. For within the ſhadow itſelf he ſometimes perceived coloured ſtreaks, ſometimes more and ſometimes fewer; but for this purpoſe a very ſtrong light was requiſite, and the opaque body was obliged to be long, and of a moderate breadth. A hair, for inſtance, or a fine needle, did not anſwer ſo well as a thin and narrow plate; and the ſtreaks were moſt diſtinguiſhable when the ſhadow was taken at the greateſt diſtance; but the light grew fainter in proportion. The number of theſe ſtreaks within the ſhadow was greater in proportion to the breadth of the plate. They were two, and ſometimes 4, if a thicker rod were made uſe of. Theſe coloured ſtreaks within the ſhadow, like thoſe on the outſide of it, were bent in an arch, round the acute angles of the ſhadow, as in *fig.* 11. At this angle alſo, as at D, other ſhorter lucid ſtreaks were viſible, bent in the form of a plume, as they are drawn betwixt D and C, each bending round and meeting again in D. Theſe angular ſtreaks appeared, though the plate or rod was not wholly immerſed in the beam of light, but the angle of it only; and there were more or fewer in number in proportion to the breadth of the rod of plate. If the plate or rod was very thin, the co-

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loured ſtreaks within the ſhadow might be ſeen to bend round from the oppoſite ſides, and meet one another, as at B. A only repreſents a ſection of the figure, and not a proper termination of the ſhadow, and the ſtreaks within each ſide of it. The coloured ſtreaks without the ſhadow bend round it in the ſame manner.

125. To obtain the more ſatisfactory proof that rays of light do not always proceed in ſtraight lines, but really bend, in paſſing by the edges of bodies, he diverſified the firſt of the above mentioned experiments in the following manner. He admitted a beam of light, by a very ſmall aperture, into a darkened room as before; and, at a great diſtance from it, he fixed a plate EF, *fig.* 12. *plate* 249. with a ſmall aperture, GH, which admitted only a part of the beam of light, and found, that when the light tranſmitted through this plate was received at ſome diſtance upon a white paper, the baſe IK was conſiderably larger than it could poſſibly have been made by rays iſſuing in right lines through the two apertures, as the other ſtraight lines drawn cloſe to their edges plainly demonſtrate.

126. That thoſe who repeat theſe experiments may not be diſappointed, F. Grimaldi gives the following inſtructions. The ſun's light muſt be very intenſe, and the apertures through which it is tranſmitted very narrow, particularly the firſt, CD, and the white paper, IK, on which it is received, muſt be at a conſiderable diſtance from the hole GH; otherwiſe it will not much exceed NO, which would be the breadth of the beam of light proceeding in ſtraight lines. He generally made the aperture CD $\frac{1}{100}$ or $\frac{1}{100}$ parts of an ancient Roman foot, and the ſecond aperture, GH, $\frac{2}{100}$ or $\frac{1}{100}$; and the diſtances DG and GN were at leaſt 12 ſuch feet. The obſervation was made in ſummer, when the atmoſphere was free from all vapours, and about mid-day. He alſo made the ſame experiment that has been recited from Dr Hooke.

127. Dechales remarked, that if ſmall ſcratches be made in any piece of poliſhed metal, and it be expoſed to the beams of the ſun in a darkened room, it will reflect the rays ſtreaked with colours in the direction of the ſcratches; as will appear if the reflected light be received upon white paper. That theſe colours are not produced by refraction, he ſays, is manifeſt; for, if the ſcratches be made upon glaſs, the effect will be the ſame; and in this caſe, if the light had been refracted at the ſurface of the glaſs, it would have been tranſmitted through it. From theſe, and other obſervations, he concludes that colour does not depend upon the refraction of light only, nor upon many other circumſtances, which he enumerates and diſcuſſes, but upon the intenſity of the light only.

128. A phenomenon of viſion, obſerved by M. De la Hire, requires to be mentioned here, becauſe the *inflection of light* ſeems to ſupply the true ſolution of it, though the author thought otherwiſe. When we look at a candle, or any luminous body, with our eyes nearly ſhut, rays of light are extended from it, in ſeveral directions, to a conſiderable diſtance, like the tails of comets. This appearance exerciſed the ſagacity of Deſcartes and Rohault, as well as of our author; but all three ſeem to have been miſtaken with reſpect to it. Descartes aſcribed this effect to certain wrinkles in the ſurface of the humours of the eye. Rohault ſays, that when the eye-lids are nearly cloſed, the edges of them act like convex lenſes. But our author ſays, that the moiſture on the ſurface of the eye, adhering partly to the eye itſelf, and partly to the edge of the eye-lid, makes a concave mirror, and ſo diſperſes the rays at their entrance into the eye. But the true reaſon ſeems to be, that the light paſſing among the eye-laſhes, in this ſituation of the eye, is inflected by its near approach to them, and therefore enters the eye in a great variety of directions. The two former of theſe opinions are objected to by our author.

129. The experiments of Grimaldi and Dr Hooke were not only repeated with the greateſt care by Sir Isaac Newton, but carried much farther than they had thought of. So little uſe had been made of Grimaldi's obſervations, that all philoſophers before Newton had aſcribed the broad ſhadows, and even the fringes of light which he deſcribed, to the ordinary refraction of the air. Sir Iſaac made in a piece of lead a ſmall hole with a pin, the breadth of which was the 42d part of an inch. Through this hole he let into his darkened chamber a beam of the ſun's light; and found that the ſhadows of hairs, and other ſlender ſubſtances placed in it, were conſiderably broader than they would have been if the rays of light had paſſed by thoſe bodies in right lines. He therefore concluded that they muſt have paſſed as they are repreſented in *fig.* 1. *Plate* CCL. in which X repreſents a ſection of the hair, and AD, BE, &c. rays of light paſſing by at different diſtances, and then falling upon the wall GQ. Since, when the paper which receives the ray is at a great diſtance from the hair, the ſhadow is broad, it muſt follow, that the hair acts upon the rays of light at ſome conſiderable diſtance from it, the action being ſtrongeſt on thoſe rays which are at the leaſt diſtance, and growing weaker and weaker on thoſe which are farther off, as repreſented in this figure; and hence it happens, that the ſhadow of the hair is much broader, in proportion to the diſtance of the paper from the hair, when it is nearer than when it is at a greater diſtance. He found, that it was not material whether the hair was ſurrounded with air, or with any other pellucid ſubſtance; for, upon repeating the experiment with the hair between wetted glaſſes, he found the ſhadow at the ſame diſtances was as big as before. Alſo the ſhadows of ſcratches made in poliſhed plates of glaſs, and the veins in the glaſs, caſt the like broad ſhadows: ſo that this breadth of ſhadow muſt proceed from ſome other cauſe than the refraction of the air.

130. The ſhadows of all bodies, metals, ſtones, glaſs, wood, horn, ice, &c. in this light were bordered with three parallel fringes, or bands of coloured light, of which that which was contiguous to the ſhadow was the broadeſt and moſt luminous, while that which was the moſt remote was the narroweſt, and ſo faint as not eaſily to be viſible. It was difficult to diſtinguiſh theſe colours, unleſs

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OPTICS.

Fig. 1.

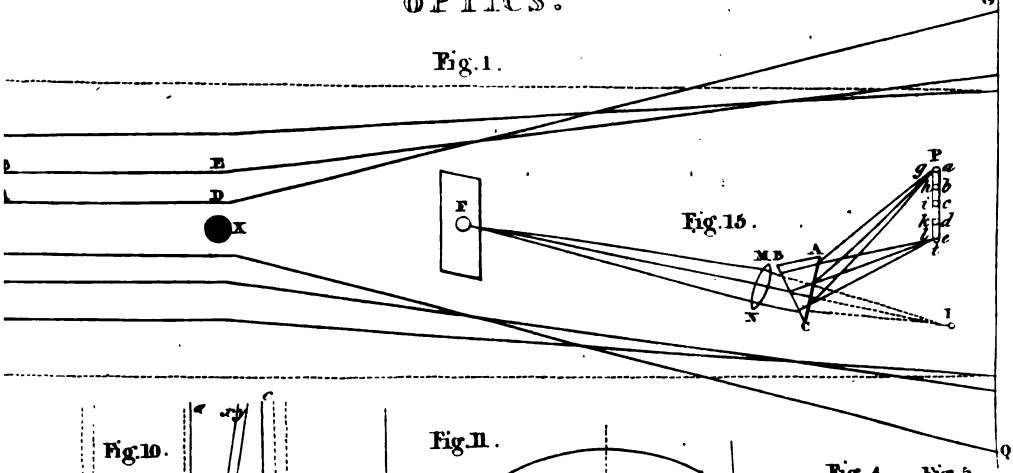


Fig. 15.

Fig. 10.

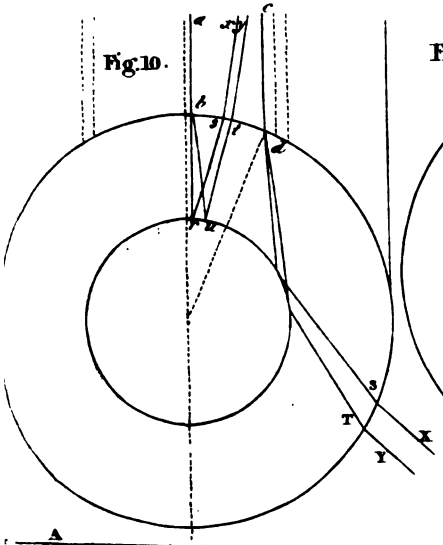


Fig. 11.

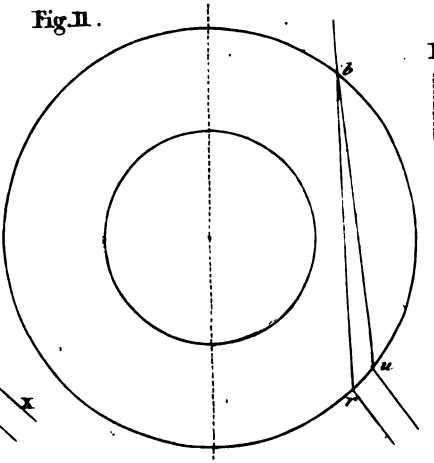


Fig. 4.

Fig. 5.

Fig. 8.

Fig. 2.

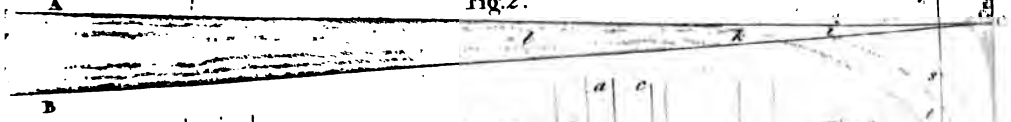


Fig. 12.

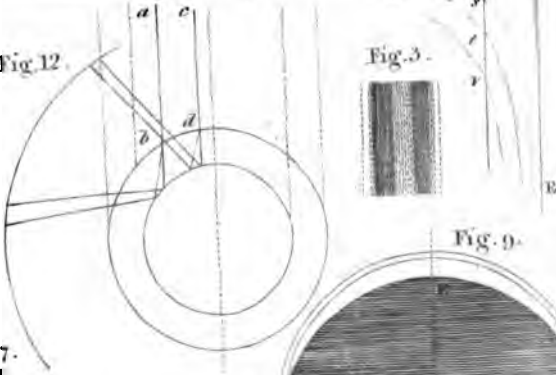


Fig. 3.

Fig. 13.

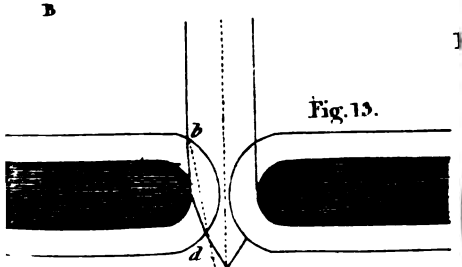


Fig. 6.

Fig. 7.

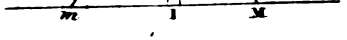


Fig. 9.

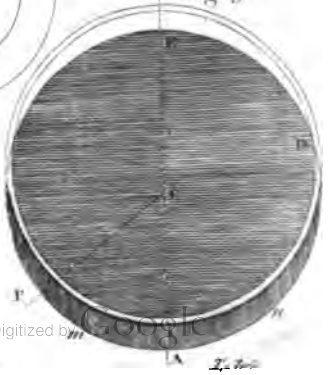
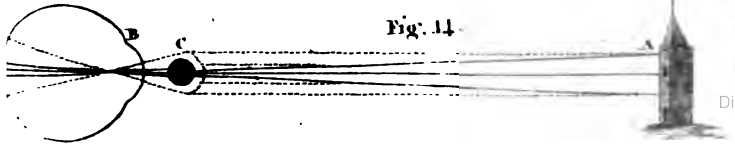


Fig. 14.



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unleſs when the light fell very obliquely upon a ſmooth paper, or ſome other ſmooth white body, ſo as to make them appear much broader than they would otherwiſe have done; but in theſe circumſtances, the colours were plainly viſible, and in the following order. The firſt or innermoſt fringe was violet, and deep blue next the ſhadow, light-blue, green, and yellow in the middle, and red without. The 2d fringe was almoſt contiguous to the firſt, and the 3d to the 2d; and both were blue within, and yellow and red without; but their colours were very faint, eſpecially thoſe of the 3d. The colours, therefore, proceeded in the following order from the ſhadow; violet, indigo, pale blue, green, yellow, red; blue, yellow, red; pale blue, pale yellow, and red. The ſhadows made by ſcratches and bubbles in poliſhed plates of glaſs, were bordered with the like fringes of coloured light. By looking on the ſun through a feather, or black ribbon, held cloſe to the eye, ſeveral rainbows will appear, the ſhadows which the fibres or threads caſt on the retina being bordered with the like fringes of colours. Meaſuring theſe fringes and their intervals with the greateſt accuracy, he found the former to be in the progreſſion of the numbers 1, $\sqrt{\frac{1}{2}}$, $\sqrt{\frac{1}{3}}$, and their intervals to be in the ſame progreſſion with them, that is, the fringes and their intervals together to be in continual progreſſion of the numbers 1, $\sqrt{\frac{1}{2}}$, $\sqrt{\frac{1}{3}}$, $\sqrt{\frac{1}{4}}$, $\sqrt{\frac{1}{5}}$, or thereabouts. And theſe proportions held the ſame very nearly at all diſtances from the hair, the dark intervals of the fringes being as broad in proportion to the breadth of the fringes at their firſt appearance as afterwards, at great diſtances from the hair, though not ſo dark and diſtinct.

131. In Sir Iſaac's next obſervation, we find a very remarkable and curious appearance, pretty ſimilar to the one noticed by Dr HOOKE, § 121, 122. The ſun ſhining into his darkened chamber, through a hole $\frac{1}{4}$ of an inch broad, he placed, at the diſtance of 2 or 3 feet from the hole, a ſheet of paſteboard, black on both ſides; in the middle of it, he made a hole about $\frac{1}{4}$ of an inch ſquare, for the light to paſs through; behind the hole, he faſtened to the paſteboard the blade of a ſharp knife, to intercept ſome part of the light which paſſed through the hole. The planes of the paſteboard and blade of the knife were parallel to one another, and perpendicular to the rays; and when they were ſo placed that none of the light fell on the paſteboard, but all of it paſſed through the hole to the knife, and there part of it fell upon the blade of the knife, and part of it paſſed by its edge, he let that part of the light which paſſed by, fall on a white paper, 2 or 3 feet beyond the knife, and there ſaw two ſtreams of faint light ſhoot out both ways from the beam of light into the ſhadow, like the tails of comets. But becauſe the ſun's direct light, by its brightneſs upon the paper, obſcured theſe faint ſtreams, ſo that he could ſcarce ſee them, he made a little hole in the midſt of the paper for that light to paſs through and fall on a black cloth behind it; and then he ſaw the two ſtreams plainly. They were like one another, and pretty nearly equal in length, breadth, and quantity of light. Their light, at that end which was next to the ſun's direct light, was pretty ſtrong for the ſpace of about $\frac{1}{4}$ of an inch, or $\frac{1}{2}$ of an inch, and decreaſed gradually till it became inſenſible. The whole length of each of theſe ſtreams, meaſured upon the paper, at 3 feet from the knife, was about 6 or 8 inches; ſo that it ſubtended an angle, at the edge of the knife, of about 10° or 12°, or at moſt 14°. Yet ſometimes he thought he ſaw it ſhoot 3° or 4° farther; but with a light ſo very faint, that he could hardly perceive it. This light he ſuſpected might, in part, ariſe from ſome other cauſe than the two ſtreams. For, placing his eye in that light, beyond the end of that ſtream which was behind the knife, and looking towards the knife, he could ſee a line of light upon its edge; and that not only when his eye was in the line of the ſtreams, but alſo when it was out of that line, either towards the point of the knife, or towards the handle. This line of light appeared contiguous to the edge of the knife, and was narrower than the light of the innermoſt fringe, and narroweſt when his eye was fartheſt from the direct light; and therefore ſeemed to paſs between the light of that fringe and the edge of the knife; and that which paſſed neareſt the edge ſeemed to be moſt bent, though not all of it. He then placed another knife by the former, ſo that their edges might be parallel, and look towards one another, and that the beam of light might fall upon both the knives, and ſome part of it paſs between their edges. In this ſituation he obſerved, that when the diſtance of their edges was about the 400th part of an inch, the ſtream divided in the middle, and left a ſhadow between the two parts. This ſhadow was ſo black and dark, that all the light which paſſed between the knives ſeemed to be bent and turned aſide to the one hand or the other; and as the knives ſtill approached one another, the ſhadow grew broader, and the ſtreams ſhorter next to it, till upon the contact of the knives, all the light vaniſhed.

132. From this experiment he concludes, that the light which is leaſt bent, and which goes to the inward ends of the ſtreams, paſſes by the edges of the knives at the greateſt diſtance; and this diſtance, when the ſhadow began to appear between the ſtreams, was about the 800th part of an inch; and the light which paſſed by the edges of the knives, at diſtances ſtill leſs and leſs, was more and more faint, and went to thoſe parts of the ſtreams which were farther from the direct light; becauſe, when the knives approached one another till they touched, thoſe parts of the ſtreams vaniſhed laſt which were fartheſt from the direct light. In the experiment of one knife only, the coloured fringes did not appear; but, on account of the breadth of the hole in the window, became ſo broad as to run into one another, and, by joining, to make one continued light in the beginning of the ſtreams; but in the laſt experiment, as the knives approached one another, a little before the ſhadow appeared between the two ſtreams, the fringes began to appear on the inner ends of the ſtreams, on either ſide of the direct light; 3 on one ſide, made by the edge of one knife, and 3 on the other ſide, made by the edge of the other knife. They were moſt diſtinct when the knives were placed at the greateſt diſtance from the hole in the window, and became ſtill more ſo by ma-

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king the hole leſs; ſo that he could ſometimes ſee a faint trace of a 4th fringe beyond the 3 above-mentioned: and as the knives approached one another, the fringes grew more diſtinct and larger, till they vaniſhed; the outermoſt vaniſhing firſt, and the innermoſt laſt. After they were all vaniſhed, and the line of light which was in the middle between them was grown very broad, extending itſelf on both ſides into the ſtreams of light deſcribed before, the above-mentioned ſhadow began to appear in the middle of this light, and to divide it along the middle into two lines of light, and increaſed till all the light vaniſhed. This enlargement of the fringes was ſo great, that the rays which went to the innermoſt fringe ſeemed to be bent about 20 times more when the fringe was ready to vaniſh, than when one of the knives was taken away.

133. From both theſe experiments compared together, Sir Iſaac concludes, that the light of the firſt fringe paſſed by the edge of the knife at a diſtance greater than the 800th part of an inch; that the light of the 2d paſſed by the edge of the knife at a greater diſtance than the light of the firſt fringe, and that of the 3d at a greater diſtance than that of the 2d; and that the light, of which the ſtreams above-mentioned conſiſted, paſſed by the edges of the knives at leſs diſtances than that of any of the fringes.

134. He then got the edges of two knives ground truly ſtraight, and pricking their points into a board, ſo that their edges might look towards one another, and, meeting near their points, contain a rectilinear angle, he faſtened their handles together, to make the angle invariable. The diſtance of the edges of the knives from one another, 4 inches from the angular point, where the edges of the knives met, was the 8th part of an inch; ſo that the angle contained by their edges was about 1° 54′. The knives being thus fixed together, he placed them in a beam of the ſun's light let into his darkened chamber, through a hole the 42d part of an inch wide, 10 or 13 feet from the hole; and he let the light which paſſed between their edges fall very obliquely on a ſmooth white ruler, ½ inch, or an inch, from the knives; and there he ſaw the fringes made by the two edges of the knives run along the edges of the ſhadows of the knives, in lines parallel to thoſe edges, without growing ſenſibly broader, till they met in angles equal to the angle contained by the edges of the knives; and where they met and joined, they ended, without croſſing one another. But if the ruler was held at a much greater diſtance from the knives, the fringes, where they were farther from the place of their meeting, were a little narrower, and they became ſomething broader as they approached nearer to one another, and after they met, they croſſed one another, and then became much broader than before. From theſe obſervations he concluded, that the diſtances at which the light compoſing the fringes paſſed by the knives, were not increaſed or altered by the approach of the knives, but that the angles, in which the rays were there bent, were much increaſed by that approach; and that the knife which was neareſt to any ray, determined which way the ray ſhould be bent, but that the other knife increaſed the bending.

135. When the rays fell very obliquely upon the ruler, at the diſtance of a 3d part of an inch from the knives, the dark line between the firſt and 2d fringe of the ſhadow of one knife, and the dark line between the firſt and 2d fringe of the ſhadow of the other knife, met one another, at the diſtance of the 5th part of an inch from the end of the light which paſſed between the knives, where their edges met one another; ſo that the diſtance of the edges of the knives, at the meeting of the dark lines, was the 160th part of an inch; and one half of that light paſſed by the edge of one knife, at a diſtance not greater than the 320th part of an inch, and, falling upon the paper, made the fringes or the ſhadow of that knife; while the other half paſſed by the edge of the other knife, at a diſtance not greater than the 320th part of an inch, and, falling upon the paper, made the fringes of the ſhadow of the other knife. But if the paper was held at a diſtance from the knives greater than the 3d part of an inch, the dark lines above mentioned met at a greater diſtance than the 5th part of an inch from the end of the light which paſſed between the knives, at the meeting of their edges; ſo that the light which fell upon the paper where thoſe dark lines met paſſed between the knives, where their edges were farther diſtant than the 160th part of an inch. For at another time, when the two knives were 8 feet and 5 inches from the little hole in the window, the light which fell upon the paper where the above-mentioned dark lines met paſſed between the knives, where the diſtance between their edges was, as in the following table, at the diſtances from the paper there noted:

136. Diſtances of the paper from the knives in inches.	Diſtances between the edges of the knives in meſſemal parts of an inch.
1½	0,012
3½	0,020
8½	0,034
32	0,057
96	0,081
192	0,087

138. From theſe obſervations he concluded, that the light which makes the fringes upon the paper is not the ſame light at all diſtances of the paper from the knives; but that, when the paper is held near the knives, the fringes are made by light which paſſes by the edges of the knives at a leſs diſtance, and is more bent than when the paper is held at a greater diſtance from the knives.

138. When the fringes of the ſhadows of the knives fell perpendicularly upon the paper, at a great diſtance from the knives, they were in the form of hyperbolas, their dimenſions being as follows. Let CA, CB, (*fig.* 2, *pl.* 250.) repreſent lines drawn upon the paper, parallel to the edges of the knives; and between which all the light would fall if it ſuffered no inflection. DE is a right line drawn through C, making the angles ACD, BCE, equal to one another, and terminating all the light which falls upon the paper, from the point where the edges of the knives meet. Then

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There *e i s*, *f k t*, and *g l v*, will be 3 hyperbolical lines, repreſenting the boundaries of the ſhadow of one of the knives, the dark line between the firſt and 2d fringes of that ſhadow, and the dark line between the 2d and 3d fringes of the ſame ſhadow. Alſo *xip*, *ykq*, and *zlr*, will be 3 other hyperbolical lines, repreſenting the boundaries of the ſhadow of the other knife, the dark line between the 1ſt and 2d fringes of that ſhadow, and the dark line between the 2d and 3d fringes of the ſame ſhadow. Theſe 3 hyperbolas are ſimilar, and equal to the former 3, and croſs them in the points *i*, *k*, and *l*; ſo that the ſhadows of the knives are terminated, and diſtinguiſhed from the firſt luminous fringes, by the lines *eis* and *xip*, till the meeting and croſſing of the fringes; and then thoſe lines croſs the fringes in the form of dark lines terminating the firſt luminous fringes on the inſide, and diſtinguiſhing them from another light, which begins to appear at *i*, and illuminates all the triangular ſpace *ip* DE*s*, comprehended by theſe dark lines and the right line DE. Of theſe hyperbolas one aſymptote is the line DE, and the other aſymptotes are parallel to the lines CA and CB. The ſun ſhining into his darkened room through the ſmall hole mentioned above, he placed at the hole a priſm to refract the light, and to form on the oppoſite wall the coloured image of the ſun; and he found, that the ſhadows of all bodies held in the coloured light between the priſm and the wall, were bordered with fringes of the colour of that light in which they were held; and comparing the fringes made in the ſeveral coloured lights, he found, that thoſe made in the red light were the largeſt, thoſe made in the violet were the leaſt, and thoſe made in the green were of a middle bigneſs. For the fringes with which the ſhadow of a man's hair were bordered, being meaſured croſs the ſhadow, at ſix inches from the hair, the diſtance between the middle and moſt luminous part of the firſt or innermoſt fringe on one ſide of the ſhadow, and that of the like fringe on the other ſide of the ſhadow, was in the full red light $\frac{1}{77}$ of an inch, and in the full violet $\frac{1}{83}$. The like diſtance between the middle and moſt luminous parts of the 2d fringes on either ſide of the ſhadow, was in the full red light $\frac{1}{133}$, and the violet $\frac{1}{143}$ of an inch; and theſe diſtances of the fringes held the ſame proportion at all diſtances from the hair, without any ſenſible variation.

139. From theſe obſervations it was evident, that the rays which made the fringes in the red light, paſſed by the hair at a greater diſtance than thoſe which made the like fringes in the violet; ſo that the hair, in cauſing theſe fringes, acted alike upon the red light or leaſt refrangible rays at a greater diſtance, and upon the violet or moſt refrangible rays at a leſs diſtance; and thereby occaſioned fringes of different ſizes, without any change in the colour of any ſort of light. It may therefore be concluded, that when the hair in the firſt obſervation was held in the white beam of the ſun's light, and caſt a ſhadow which was bordered with three fringes of coloured light, thoſe colours aroſe not from any new modifications impreſſed upon the rays of light by the hair, but only from the various inflections whereby the ſeveral ſorts of rays were ſeparated from one another, which before ſeparation, by the mixture of all their colours, compoſed the white beam of the ſun's light; but, when ſeparated, compoſed lights of the ſeveral colours which they are originally diſpoſed to exhibit.

140. The firſt perſon who purſued any experiments ſimilar to thoſe of Newton on inflected light, was M. MARALDI; whoſe obſervations chiefly reſpect the inflection of light towards other bodies, whereby their ſhadows are partially illuminated; and many of the circumſtances which he noticed relating to it are well worthy of attention. He expoſed in the light of the ſun a cylinder of wood 3 feet long, and 6½ lines in diameter; when its ſhadow, being received upon a paper held cloſe to it, was everywhere equally black and well defined, and continued to be ſo to the diſtance of 23 inches from it. At a greater diſtance the ſhadow appeared to be of two different denſities; for the two extremities of the ſhadow, in the direction of the length of the cylinder, were terminated by two dark ſtrokes, a little more than a line in breadth. Within theſe dark lines there was a faint light, equally diſperſed through the ſhadow, which formed an uniform penumbra, much lighter than the dark ſtrokes at the extremity, or than the ſhadow received near the cylinder. This appearance is repreſented in *plate* 250, *fig.* 3. As the cylinder was removed to a greater diſtance from the paper, the two black lines continued to be nearly of the ſame breadth, and the ſame degree of obſcurity; but the penumbra in the middle grew lighter, and its breadth diminiſhed, ſo that the two dark lines at the extremity of the ſhadow approached one another, till, at the diſtance of 60 inches, they coincided, and the penumbra in the middle entirely vaniſhed. At a ſtill greater diſtance, a faint penumbra was viſible; but it was ill defined, and grew broader as the cylinder was removed farther off, but was ſenſible at a very great diſtance. A narrow and faint penumbra was alſo ſeen on the outſide of the dark ſhadow. And on the outſide of this, there was a tract more ſtrongly illuminated than the reſt of the paper. The breadth of the external penumbra increaſed with the diſtance of the ſhadow from the cylinder, and the breadth of the tract of light on the outſide of it was alſo enlarged; but its ſplendour diminiſhed with the diſtance.

141. He repeated theſe experiments with 3 other cylinders of different dimenſions; and from them all he inferred, that every opaque cylindrical body, expoſed to the light of the ſun, makes a ſhadow which is black and dark to the diſtance of 38 to 45 diameters of the cylinder which forms it; and that, at a greater diſtance, the middle part begins to be illuminated in the manner deſcribed above. Other rays were deflected from the body, and formed a ſtrong light on the outſide of the ſhadow, and which might at the ſame time contribute to dilute the outer ſhadow, though he ſuppoſed that penumbra to be occaſioned principally by that part of the paper not being enlightened, except by a part of the ſun's diſk only, according

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according to the known principles of optics. The same experiments he made with globes of several diameters; but he found, that, whereas the shadows of the cylinders did not disappear but at the distance of 41 of their diameters, those of the globes were not visible beyond 15 of their diameters; which he thought was owing to the light being inflected on every side of a globe, and consequently in such a quantity as to disperse the shadows sooner than in the case of the cylinders. In all these cases, the penumbra occasioned by the inflected light began to be visible at a less distance from the body in the stronger light of the sun than in a weaker, on account of the greater quantity of rays inflected in those circumstances.

142. M. Maraldi, being sensible that the above-mentioned phenomena of the shadows were caused by inflected light, was induced to give more particular attention to this remarkable property, and to repeat the experiments of Grimaldi and Sir Isaac Newton in a darkened room. In doing this, he observed, that, besides the enlarged shadow of a hair, a fine needle, &c. the bright gleam of light that bordered it, and the 3 coloured rings next to this enlightened part, when the shadow was at a considerable distance from the hair, the dark central shadow was divided in the middle by a mixture of light; and that it was not of the same density, except when it was very near the hair. This new appearance is exactly similar to what he had observed with respect to the shadows in the open day-light above-mentioned.

143. Having placed a bristle in the rays of the sun, admitted into a dark chamber by a small hole, at the distance of 9 feet from the hole, it made a shadow, which, being received at 5 or 6 feet from the object, he observed to consist of several streaks of light and shade. The middle part was a faint penumbra, bordered by a darker shadow, and after that by a narrower penumbra; next to which was a light streak broader than the dark part, and next to the streak of light, the red, violet, and blue colours were seen as in the shadow of the hair. He also placed, in the same rays, several needles of different sizes; but the appearances were so exceedingly various and singular, that he does not recite them. He exposed in the rays of the sun admitted by a small hole into a dark chamber, a plate two inches long, and a little more than half a line broad. This plate being fixed perpendicularly to the rays, at the distance of nine feet from the hole, a faint light was seen uniformly dispersed over the shadow, when it was received perpendicularly to it, and very near. The shadow of the same plate being received at the distance of 2½ feet, was divided into four very narrow black streaks, separated by small lighter intervals equal to them. The boundaries of this shadow on each side had a penumbra, which was terminated by a very strong light, next to which were the coloured streaks of red, violet, and blue, as before. This is represented in *Plate* 250, *fig.* 4.

144. The shadow of the same plate, at 4½ feet distance from it, was divided into two black streaks only, the two outermost having disappeared, as in *fig.* 5; but these two black streaks which remained were broader than before, and separated by a lighter shade, twice as broad as one of the former black streaks, when the shadow was taken at 2½ feet. This penumbra in the middle had a tinge of red. After the two black streaks there appeared a pretty strong penumbra, terminated by the two streaks of light, which were now broad and splendid, after which followed the coloured streaks. A 2d plate, 2 inches long and a line broad, being placed like the former, 14 feet from the hole by which the rays of the sun were admitted, its shadow being received perpendicularly very near the plate, was illuminated by a faint light, equally dispersed, as in the preceding plate. But being received at 13 feet from the plate, six small black streaks began to be visible, as in *fig.* 6. At 17 feet from the plate, the black streaks were broader, more distinct, and more separated from the streaks that were less dark. At 42 feet from the plate, only two black streaks were seen in the middle of the penumbra, as in *fig.* 7. This middle penumbra between the two black streaks was tinged with red. Next to the black streaks there always appeared the streaks of light, which were broad, and the coloured streaks next to them. Receiving the shadow of the same plate at the distance of 72 feet, the appearances were the same as in the former situation, except that the two black streaks were broader, and the interval between them, occupied by the penumbra, was broader also, and tinged with a deeper red.

145. In the same rays of the sun he placed different plates, larger than the former, one of them a line and a half, another two lines, another 3 lines broad, &c. but receiving their shadows upon paper, he could not perceive in them those streaks of faint light which he had observed in the shadows of the small plates; though he received these shadows at the distance of 56 feet. Nothing was seen but a weak light, equally diffused as in the shadows of the two smallest plates, received very near them. The streaks of light in the shadows of needles of a middling size, our author ascribed to the rays of light which are inflected at different distances from the bodies; and he imagined that their crossing one another was sufficient to account for the variations observable in them at different distances. The extraordinary size of the shadows of these small substances M. Maraldi thought to be occasioned by the shadow from the enlightened part of the sky, added to that which was made by the light of the sun, and also to a vortex occasioned by the circulation of the inflected light behind the object.

146. M. Maraldi having made the preceding experiments upon single long substances, had the curiosity to place two of them so as to cross one another in a beam of the sun's light. The shadows of two hairs placed in this manner, and received at some distance from them, appeared to be painted reciprocally one upon another, so that the obscure part of one of them was visible upon the obscure part of the other. The streaks of light also crossed one another, and the coloured streaks did the same. Having placed a needle and a hair crossing one another, their shadows, at the same distance, exhibited the same appearances as the shadows of the two hairs, though the shadow of the needle was the stronger. He also placed in the rays of the sun a bristle and a plate of iron a line thick.

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thick, ſo that they croſſed one another obliquely; and when their ſhadows were received at the ſame diſtance, the light and dark ſtreaks of the ſhadow of the briſtle were viſible ſo far as the ſhadow of the plate on the ſide of the acute angle, but not on the ſide of the obtuſe angle, whether the briſtle or the plate were placed next to the rays. The plate made a ſhadow ſufficiently dark, divided into ſix black ſtreaks; and theſe were again divided by as many light ones equal to them; and yet all the ſtreaks belonging to the ſhadow of the briſtle were viſible upon it, as in *fig.* 8.

147. M. MARALDI expoſed ſeveral ſmall globes in the light of the ſun in his dark chamber, and compared their ſhadows with thoſe of the long ſubſtances, as he had done in the day-light, and the appearances were ſtill ſimilar. There was much more light in the ſhadows of the globes than in thoſe of the cylinders, not only when they were both of an equal diameter, but when that of the globe was larger than that of the cylinder, and the ſhadows of both the bodies were received at the ſame diſtance. He could perceive no difference of light in the ſhadows of the plates which were a little more than one line broad, though they were received at the diſtance of 72 feet; but he could eaſily ſee a difference of ſhades in thoſe of the globes, taken at the ſame diſtance, though they were $2\frac{1}{2}$ lines in diameter. To explain the colours at the edges of theſe ſhadows, he contrived to throw ſome of the ſhadows upon others; and the following obſervations, though they did not enable him to accompliſh what he intended, are worth reciting: Having thrown ſeveral of the ſimilar colours upon one another, and thereby produced a tinge more lively than before, he threw the gleam of light, which always intervened between the colours and the darker part of the ſhadow, upon different parts of other ſhadows; and obſerved, that, when it fell upon the exterior penumbra made by another needle, it produced a beautiful ſky-blue colour, almoſt like that which was produced by two blue colours thrown together. When the ſame gleam of light fell upon the deeper ſhadow in the middle, it produced a red colour. He placed two plates of iron, each 3 or 4 lines broad, very near one another, but with a very ſmall interval between them; and having placed them in the rays of the ſun, and received their ſhadows at 15 or 20 feet from them, he ſaw no light between them but a continued ſhadow, in the middle of which were ſome ſtreaks of a lively purple, parallel to one another, and ſeparated by other black ſtreaks; but between them there were other ſtreaks, both of a very faint green, and alſo of a pale yellow.

148. Among thoſe who followed Sir Iſaac Newton in his obſervations on the inflection of light, we find the ingenious M. MAIRAN: but he only endeavoured to explain the old facts, by the hypotheſis of an atmoſphere ſurrounding all bodies; and conſequently making two reflections and refractions of the light that impinges upon them, one at the ſurface of the atmoſphere, and the other at that of the body itſelf. This atmoſphere he ſuppoſed to be of a variable denſity and refractive power, like the air.

149. M. DU TOUR thought this variable atmoſphere ſuperfluous, and imagined that he could account for all the phenomena by an atmoſphere of an uniform denſity, and of a leſs refractive power than the air ſurrounding all bodies. But we are leſs obliged to this gentleman for his ingenious *hypotheſis*, than for the beautiful variety with which he has exhibited the *experiments*, which render it much eaſier for any perſon to inveſtigate the true cauſes of them. Before he paid attention to this ſubject, only 3 fringes had been obſerved in the colours produced by the inflection of light; but he obſerved a greater number, and adopted from Grimaldi the following ingenious method of making them all appear very diſtinct. He took a circular board ABED; (*Pl.* 250, *fig.* 9.) 13 inches in diameter, the ſurface of which was black, except at the edge, where there was a ring of white paper about 3 lines broad, in order to trace the circumference of a circle, divided into 360°, beginning at the point A, and reckoning 180° on each hand to the point E; B and D being each of them placed at 90°. A ſlip of parchment 3 inches broad, in the form of a hoop, was faſtened round the board, and pierced at the point E with a ſquare hole, each ſide being 4 or 5 lines, to admit a ray of the ſun's light. In the centre of the board C, and perpendicular to it, he fixed a pin about $\frac{1}{4}$ of a line in diameter. This hoop was ſo diſpoſed, that a ray of light entering the dark chamber, through a vertical cleft of $2\frac{1}{2}$ lines in length, and about as wide as the diameter of the pin, went through the hole at E, and paſſing parallel to the plane of the board, projected the image of the ſun and the ſhadow of the pin at A. In theſe circumſtances he obſerved,

150. 1. That quite round the concave ſurface of this hoop, there were a multitude of coloured ſtreaks; but that the ſpace *mAn*, of about 18°, the middle of which was occupied by the image of the ſun, was covered with a faint light only. 2. The order of the colours in theſe ſtreaks was generally ſuch that the moſt refrangible rays were the neareſt to the incident ray ECA; ſo that, beginning from the point A, the violet was the firſt and the red the laſt colour in each of the ſtreaks. In ſome of them, however, the colours were diſpoſed in a contrary order. 3. The image of the ſun, projected on each ſide of the point A, was divided by the ſhadow of the pin, which was bordered by two luminous ſtreaks. 4. The coloured ſtreaks were narrower in ſome parts of the hoop than others, and generally decreaſed in breadth in receding from the point A. 5. Among theſe coloured ſtreaks, there were ſometimes others which were white, a line or a line and an half in breadth, which were always bordered on both ſides by a ſtreak of orange colour, at leaſt when the light of the ſun was intenſe, and the chamber ſufficiently dark.

151. From this experiment he thought it was evident, that the rays which paſſed beyond the pin were not the only ones that were decompoſed, as thoſe which were reflected back from the pin were decompoſed alſo; from which he concluded, that they muſt have undergone ſome refraction. He alſo thought that thoſe which went beyond the pin ſuffered a reflection, ſo that they were all affected in a ſimilar manner. To account for theſe facts, he deſcribes the progreſs of a ray of light

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through an uniform atmoſphere, which he ſuppoſes to ſurround the pin; and ſhows, that the differently refrangible rays will be ſeparated at their emergence from it. He ſhows that the ray *a b*, *fig.* 10, after being refracted at *b*, reflected at *r* and *u*, and again refracted at *s* and *t*, will be divided into its proper colours; the leaſt refrangible or the red rays iſſuing at *x*, and the moſt refrangible or violet at *y*; which agrees with his obſervations. Thoſe ſtreaks in which the colours appear in a contrary order he aſcribes to inequalities in the ſurface of the pin.

152. To repeat theſe experiments, he ſays, that the ſky muſt be very clear and free from vapours, in order to exhibit the colours with the greateſt diſtinctneſs; ſince even the vapours that are imperceptible will diminiſh the luſtre of the colours on every part of the hoop, and even efface ſome of them, eſpecially thoſe which are on that part in which the beam of light enters, as at E; *Pl.* CCL. *fig.* 9, where the colours are always fainter than in any other place, and indeed can never be diſtinguiſhed, except when the hole E is confined by black ſubſtances, ſo as to intercept a part of the light that might reach the pin; and unleſs alſo thoſe rays which go beyond the pin to form the image of the ſun at A be ſtopped, ſo that no rays are viſible except thoſe that are reflected towards the hole, and which make the faint ſtreaks. The coloured ſtreaks next the ſhadow of the pin, he ſhows, are formed by thoſe rays which, entering the atmoſphere, do not fall upon the pin; and, without any reflection, are only refracted at their entering and leaving the atmoſphere, as at *b* and *r u*, *Plate* CCL, *fig.* 11. In this caſe, the red or leaſt refrangible rays will iſſue at *r*, and the violet at *u*. To diſtinguiſh the rays which fell upon the hoop in any particular direction, from thoſe that came in any other, he made an opening in the hoop, as at P, *fig.* 9, by which he could, with advantage, and at any diſtance from the centre, obſerve thoſe rays unmixed with any other. To account for the coloured ſtreaks being larger next the ſhadow of the pin, and growing narrower to the place where the light was admitted, he ſhows, by *fig.* 12, that the rays *a b* are farther ſeparated by both the refractions than the rays *c d*. His other obſervations ſeem to prove that the refracting *atmoſpheres* ſurrounding all kinds of bodies are of the ſame ſize; for when he placed a great variety of ſubſtances, and of different ſizes alſo, he always found the coloured ſtreaks of the ſame dimenſions. As the rays which formed theſe coloured ſtreaks are but little diverted out of their way, our author infers that this atmoſphere is of ſmall extent, and that its refractive power is not much leſs than that of air. Expoſing two pieces of paper in the beam of light, ſo that part of it paſſed between two planes formed by them, M. Du Tour obſerved, that the edges of this light, received upon paper, were bordered with two orange-coloured ſtreaks, which Newton had not taken notice of in any of his experiments. To account for them, he ſuppoſes, that, in *fig.* 13, the more refrangible of the rays which enter at *b* are ſo refracted, that they do not reach the ſurface of the body itſelf at R: ſo that the red and orange-coloured light may be reflected from thence in the direction *dM*, where the orange-coloured ſtreaks will be formed; and, for the ſame reaſon, another ſtreak of orange will be formed at *m*, by the rays which enter the atmoſphere on the other ſide of the chink.

153. But all ſuch attempts of philoſophers, to explain theſe phenomena by *atmoſpheres*, give no explanation whatever of the phyſical cauſe of the phenomena. A phenomenon is ſome individual fact or event in nature. We are ſaid to explain it when we point out the *general fact* in which it is comprehended, and ſhow the manner in which it is ſo comprehended, or the particular modification of the general *fact*. In the preſent inſtance there is no general *fact* referred to. The atmoſphere is a mere gratuitous ſuppoſition; and all that is done is, to ſhow a reſemblance between the phenomena of inflection of light to what would be the phenomena were bodies ſurrounded with ſuch atmoſpheres; and, even in this point of view, the diſcuſſions of Mairan and Du Tour are extremely deficient. They have been ſatisfied with very vague reſemblances to a fact obſerved in *one ſingle inſtance*, viz. the refraction of light through the atmoſphere of this globe. The attempt is to explain how light is turned out of its direction by paſſing near the ſurface of bodies. This indicates the action of forces in a direction tranſverſe to that of the light. Newton took the right road of inveſtigation, by taking the phenomenon in its original ſimplicity, and attending merely to this, that the rays *are* deflected from their former courſe; and the ſole aim of his inveſtigation was to diſcover the laws, *i. e.* the more general facts in this deflection. He deduced from the phenomena, that ſome rays are more deflected than others, and endeavoured to determine in what rays the deflections are moſt remarkable: and no experiment of M. Du Tour has ſhown that he was miſtaken in his modified aſſertion, that thoſe rays are moſt inflected which paſs neareſt to the body. We ſay *modified aſſertion*; for Newton points out with great ſagacity many inſtances of alternate fits of *inflection* and *deflection*; and takes it for granted, that the law of continuity is obſerved in theſe phenomena, and that the change of inflection into deflection is gradual. But theſe analogical diſcuſſions are eminently deficient in another reſpect: They are held out as mechanical explanations of the changes of motion obſerved in rays of light. When it ſhall be ſhown, that theſe are preciſely ſuch as are obſerved in refracting atmoſpheres, nothing is done towards deciding the original queſtion; for the action of refracting atmoſpheres preſents it in all its difficulties, and we muſt ſtill aſk *how do theſe atmoſpheres produce this effect?* No advance whatever is gained in ſcience by thruſting in this hypothetical atmoſphere; and Newton did wiſely in attaching himſelf to the ſimple fact: and he thus gives us another ſtep in ſcience, by ſhowing us a fact unknown before, *viz.* that the action of bodies on light is not confined to tranſparent bodies. He added another general fact to our former ſtock, *that light as well as other matter is acted on at a diſtance*; and thus he made a very important deduction, *that* REFLECTION, REFRACTION, *and* INFLECTION, *are probably brought about by the ſame forces.*

154. We would extend this obſervation to all attempts

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attempts of philoſophers to explain the phenomena of nature by the *immediate* action of *inviſible fluids*, magnetical, electrical, nervous *æthers*, &c. and we would add, that all of them are equally illogical. They are all attempts to explain changes of motion by IMPULSE; and proceed on the previous ſuppoſition, that the changes of motion by impulſe are perfectly underſtood; a ſuppoſition quite gratuitous, nay falſe. But this is not all; changes of motion by impulſe are very familiar, and the general laws are pretty well known; ſo that when it can be ſhown that impulſe really operates in a phenomenon, we are ſatisfied with the explanation. When we ſee a glaſs ball hanging as a pendulum put in motion by the ſtroke of another equal ball ſimilarly ſuſpended, we think its motion is ſufficiently explained by the common laws of colliſion. But this is a very incomplete view of the matter. It remains to be proved, that the motion was really produced by impulſe, that is, by the one ball coming into contact with the other; and we ſhall find that *real* impulſe is far from being ſo familiar as we imagine. When one object-glaſs of a very long teleſcope lies upon another, nothing is obſerved at the place of contact of the two ſpherical glaſſes, unleſs the weight of the upper one be conſiderable; in which caſe a greaſy-like ſpot is obſerved. If now the upper glaſs be preſſed off the other, the ſpot will increaſe in diameter, and have a coloured margin. By gradually increaſing the preſſure, the breadth of the coloured ſpot will increaſe, and it will be found to conſiſt of concentric arches of different colours, increaſing in number and breadth by an increaſe of preſſure. When this is ſufficiently great, a black or unreflecting ſpot appears in the middle, ſharply defined, with a ſilvery margin, and increaſing in breadth with preſſure. No additional preſſure makes any change, excepting in the diameters of the coloured rings. When the preſſure is gradually diminiſhed, the rings contract, the black ſpot vaniſhes, and all the colours vaniſh in the contrary order to that of their firſt appearance. When the preſſure is meaſured which is neceſſary for producing the black ſpot, it is found conſiderably to exceed 800 lb. for every ſquare inch of the black ſpot.

155. It is inconteſtably proved, that the coloured rings are produced by the reflection of light in thoſe parts where the glaſſes are at certain ſmall diſtances from each other, meaſurable by means of the diameter of the ſpheres, of which the adjoining ſurfaces of the glaſſes are portions; and the want of reflection in the middle ſeems to indicate the want of this neceſſary diſtance, and that the two glaſſes are there in contact, making but one, their ſurfaces being flattened by compreſſion. The glaſſes ſeem to be kept aſunder by mutual forces, which are overcome by external preſſure, and which again ſeparate them when the preſſure is removed. When therefore the one glaſs ball puts the other in motion by ſtriking it, we are entitled to ſay, that unleſs the preſſure during the ſtroke has been equal to 800 lb. for every ſquare inch of contact, the motion has been produced, without real contact or impulſe, by the action of repulſive forces exerted between the balls. Many ſuch communications of motion happen, where we cannot ſay that the impulſive preſſure is greater than that now mentioned; and in ſuch caſes we are entitled to ſay, that the motion has been produced, without real impulſe, by repulſive forces acting at a diſtance. But we conclude too haſtily, from the phenomena of the object-glaſſes, that a preſſure exceeding 806 lb. on the ſquare inch, will produce contact. Analogy obliges us to ſay, not that the glaſſes touch each other through the extent of the black ſpot, but that their diſtance is there too ſmall for the ſenſible reflection of light; and it remains undecided whether any preſſure, however great, can annihilate all diſtance between them. So far, therefore, from impulſe being a familiar fact, and its ſuppoſed laws being proper and logical principles of reaſoning and explanation, it appears extremely doubtful whether the fact has *ever* been obſerved; and it muſt therefore be againſt the rules of logic to adduce the laws of impulſe for the explanation of any abſtruſe phenomenon.

156. ÆTHER and other fluid atmoſpheres have often been reſorted to by philoſophers puzzled for an explanation; and all this trouble has been taken to avoid the ſuppoſed difficulty of bodies acting at a diſtance. This is only putting the difficulty a ſtep farther off. In all theſe attempts the very thing is *ſuppoſed* which the philoſophers wiſh to avoid. Theſe æthers have been fitted for their taſks, by ſuppoſing them of variable denſities. Such a variation in denſity cannot be conceived without ſuppoſing the particles to act on particles not in contact with them, and to a diſtance as great as that to which the change of denſity extends. The very ſimpleſt form of an elaſtic fluid ſuppoſes this, either with reſpect to its own particles, or with reſpect to the particles of a ſtill more ſubtile fluid, from the interſperſion of which it derives its elaſticity. To get rid of one action at a diſtance, we thus introduce millions. Inſtead, therefore, of naturaliſts pluming themſelves on ſuch explanations, and having recourſe, in all their difficulties, to the *æther of Sir Iſaac Newton*, we may rather wonder how that great man, not more eminent for penetration and invention than for accuracy of conception and juſtneſs of reaſoning, ſhould ſo far deviate from that path of logical inveſtigation in which he had moſt ſucceſsfully advanced, and ſhould, in his fabrication of æther, and application of it to explain the more abſtruſe phenomena of nature, at once tranſgreſs *all* the rules of philoſophizing which he had preſcribed to himſelf and others. Let this ſlip, this mark of frail mortality, put us on our guard, leſt we alſo be ſeduced by the ſpecious offers of explanations which are held out to us by means of inviſible atmoſpheres of every kind.

157. M. LE CAT has explained a phenomenon of viſion depending upon the inflection of light, which ſhows, that, in ſome caſes objects appear magnified by this. Looking at a diſtant ſteeple, when a wire, of a leſs diameter than the pupil of his eye, was held pretty near to it, and drawing it ſeveral times betwixt his eye and that object, he was ſurpriſed to find, that every time the wire

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passed before his pupil, the steeple seemed to change its place, and some hills beyond the steeple seemed to have the same motion, just as if a lens had been drawn betwixt his eye and them. Examining this appearance more attentively, he found that there was a position of the wire, but very difficult to keep, in which the steeple seemed not to have any motion, when the wire was passed before his eye; and in this case, the steeple appeared less distinctly, and seemed to be magnified. These effects being similar to those of a lens, he attended to them more particularly; and placed his eye in such a manner with respect to the steeple, that the rays of light by which he saw it must come very close to the edge of a window where he had placed himself to make his observations. Then passing the wire once more before his eye, he observed, that, when it was in the visual axis, the steeple appeared nearer to the window, on whichever side the wire was made to approach. He repeated this experiment, and constantly with the same result, the object being thus always magnified, and nearly doubled. This phenomenon is easily explained by *Pl.* 250, *fig.* 14. in which B represents the eye, A the steeple, and C the diameter of the wire. The black lines express the cone of light by which the natural image of the steeple A is formed, and which is much narrower than the diameter of the wire C; but the dotted lines include not only that cone of light, stopped and turned out of its course by the wire, but also more distant rays inflected by the wire, and thereby thrown more converging into the pupil; just as would have been the effect of the interposition of a lens between the eye and the object. The result of this experiment was the same, whatever substances he made use of in the place of the wire, provided they were of the same diameter.

Sect. V. Discoveries *concerning* Vision.

158. Maurolycus was the first who showed the true theory of vision, by demonstrating that the crystalline humour of the eye, is a lens which collects the light issuing from external objects, and throws them upon the retina, where is the focus of each pencil. He did not however find out, that, by means of this refraction of the rays, an image of every visible object was formed upon the retina, though this seems hardly to have been a step beyond the discovery he had already made. Montucla indeed, conjectures, that he was prevented from mentioning this part of the discovery by the difficulty of accounting for the upright appearance of objects, as the image of the retina is always inverted. This discovery was made by Kepler; but he, too, was much perplexed with the inverted position of the image. The rectification of these images, he says, is the business of the mind; which, when it perceives an impression on the lower part of the retina, considers it as made by rays proceeding from the higher parts of objects; tracing the rays back to the pupil, where they cross one another. But this hypothesis can scarcely be deemed satisfactory. Kepler did not attempt to account for the manner in which the mind perceives the images upon the retina, and blames Vitellio for attempting prematurely to determine a question of this nature, and which indeed, he says, does not belong to optics. He accounts, however, though not in a satisfactory manner, from the power we have of seeing distinctly at different distances.

159. The discovery concerning vision was completed by Scheiner. For, in cutting away the coats of the back part of the eyes of sheep and oxen, and presenting several objects before them, within the usual distance of vision, he saw their images distinctly and beautifully painted upon the retina. He did the same thing with the human eye, and exhibited this curious experiment at Rome in 1625. He takes particular notice of the resemblance between the eye and the camera obscura, and explains a variety of methods to make the images of objects erect. As to the images of objects being inverted in the eye, he acquiesces in the reason given for it by Kepler. He knew that the pupil of the eye is enlarged to view remote objects, and that it is contracted while we are viewing those that are near; and this he proved by experiment, and illustrated by figures. He also took a good deal of pains to ascertain the density and refractive power of all the humours of the eye, by comparing their magnifying power with that of water or glass in the same form and circumstances. The result of his inquiries was, that the aqueous humour doth not differ much from water in this respect, nor the crystalline from glass; and that the vitreous humour is a medium between both. He also very accurately and minutely traces the progress of the rays of light through all the humours of the eye; and after discussing every possible hypothesis concerning the proper seat of vision, he demonstrates that it is in the retina, and shows that this was the opinion of Alhazen, Vitellio, Kepler, and all the most eminent philosophers. He produces many reasons of his own for this hypothesis; answers a great number of objections to it; and, by a variety of arguments, refutes the opinion of former times, that the seat of vision is in the crystalline.

160. Descartes makes a good number of observations on the phenomena of vision. He explains satisfactorily the natural methods of judging of the magnitudes, situations, and distances, of objects by the direction of the optic axes; comparing it to a blind man's judging of the size and distance of an object, by feeling at it with two sticks of a known length, when the hands in which he holds them are at a known distance from each other. He also observes, that having been accustomed to judge of the situation of objects by their images falling on a particular part of the eye; if by any distortion of the eye they fall on a different place, we are apt to mistake their situation, or imagine one object to be two; as we imagine one stick to be two, when it is placed between two contiguous fingers laid across one another. But he observes, that all the methods we have of judging of the distances of objects are very uncertain, and extend but to narrow limits. The direction of the optic axes, he says, will not serve us beyond 15 or 20 feet, and the change of form of the crystalline not more than 3 or 4 feet. For he imagined that the eye conforms itself to the view of near or distant objects by a change in the curvature

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vature of the cryſtalline, which he ſuppoſed to be a muſcle, the tendons of it being the proceſſus ciliares. In another place, he ſays, that the change in the conformation of the eye is of no uſe to us for the purpoſe of judging of diſtances beyond 4 or 5 feet, and the angle of the optic axis not more than 100 or 200 feet: for this reaſon, he ſays, that the ſun and moon are conceived to be much more nearly of the ſame ſize than they are in reality. White and luminous objects, he ſays, appear larger than others, and alſo the parts contiguous to thoſe on which the rays actually impinge; and for the ſame reaſon, if the objects be ſmall, and placed at a great diſtance, they will always appear round, the figure of the angles diſappearing.

161. The celebrated BERKELEY, Bp. of Cloyne, publiſhed, in 1709, *An Eſſay towards a New Theory of Viſion*, which contains the ſolution of many difficulties. He does not admit, that it is by means of thoſe lines and angles, which are extremely uſeful in explaining the theory of optics, that different diſtances are judged of by the ſenſe of ſight; neither does he think that the mere direction of the optic axes, or the greater or leſs divergency of the rays of light, are ſufficient for this purpoſe. "I appeal (ſays he) to any one's experience, whether, upon ſight of an *object*, he compute its diſtance by the bigneſs of the angle made by the meeting of the two *optic axes*? or whether he ever thinks of the greater or leſs divergency of the rays which arrive from any point to his pupil? Nay, whether it be not perfectly impoſſible for him to perceive, by ſenſe, the various angles wherewith the rays, according to their greater or leſſer divergency, fell upon his eye?" That there is a neceſſary connection between theſe various angles, &c. and different degrees of diſtance, and that this connection is known to every perſon ſkilled in optics, he readily acknowledges; but "in vain (ſays he) ſhall all the mathematicians in the world tell me that I *perceive* certain *lines* and *angles*, which introduce into my mind the various notions of *diſtance*, ſo long as I am myſelf conſcious of no ſuch thing." Diſtance, magnitude, and even figure, he maintains to be the objects of immediate perception only by the ſenſe of touch; and that when we judge of them by ſight, it is from different ſenſations felt in the eye, which experience has taught us to be the conſequence of viewing objects of greater or leſs magnitude, of different figures, and at different diſtances. Theſe various ſenſations, with the reſpective diſtances, figures, and magnitudes by which they are occaſioned, become ſo cloſely aſſociated in the mind long before the period of diſtinct recollection, that the preſence of the one inſtantly ſuggeſts the other; and we attribute to the ſenſe of ſight thoſe notions which are acquired by the ſenſe of touch, and of which certain *viſual* ſenſations are merely the ſigns or ſymbols, juſt as words are the ſymbols of ideas. Upon theſe principles he accounts, in a manner worthy of the reader's attention, for ſingle viſion by both eyes, and for our perceiving objects erect by inverted images of them on the retina tunica.

162. Subſequent writers have made great diſcoveries in the theory of viſion; and among them there is hardly any one to whom this branch of ſcience is ſo much indebted as to Dr REID. Their reaſonings, however, our limits will not permit us to detail, nor do they properly belong to this part of the article; they are connected with the deſcription of the eye itſelf, the various modes of viſion, and optical deceptions to which we are liable. See *Part* I. *Sect.* III.

SECT. VI. DISCOVERIES *of* OPTICAL INSTRUMENTS.

163. THE ancients were ſo little acquainted with the ſcience of Optics, that they ſeem to have had no inſtruments of the optical kind, excepting the glaſs globes and ſpeculums formerly mentioned, which they uſed in ſome caſes for magnifying and burning. Alhazen gave the firſt hint of the invention of SPECTACLES, and it is probable that they were found out ſoon after his time. From the writings of ALHAZEN, together with the obſervations and experiments of Roger Bacon, it is not improbable that ſome monks gradually hit upon the conſtruction of ſpectacles; to which BACON's leſſer ſegment, notwithſtanding his miſtake concerning it, was a nearer approach than Alhazen's larger one. Whoever they were that purſued the diſcoveries of Bacon, they probably obſerved, that a very ſmall convex glaſs, when held at a greater diſtance from the book, would magnify the letters more than when it was placed cloſe to them, in which poſition only Bacon ſeems to have uſed it. In the next place, they might try whether two of theſe ſmall ſegments of a ſphere placed together, or a glaſs convex on both ſides, would not magnify more than one of them. They would then find, that two of theſe glaſſes, one for each eye, would anſwer the purpoſe of reading better than one; and laſtly, they might find, that different degrees of convexity ſuited different perſons.

164. It is certain that ſpectacles were well known in the 13th century, and not long before. It is ſaid that ALEXANDER SPINA, a native of Piſa, who died in 1313, and who was very ingenious in executing whatever he ſaw or heard of, as having been done by others, happened to ſee a pair of ſpectacles in the hands of a perſon who would not explain them to him; but that he ſucceeded in making a pair for himſelf, and immediately made the conſtruction public, for the good of others. It is alſo inſcribed on the tomb of SALVINUS ARMATUS, a nobleman of Florence, who died in 1317, that he was the inventor of ſpectacles.

165. The uſe of CONCAVE GLASSES, to help thoſe perſons who are ſhort-ſighted, was probably a diſcovery that followed not long after that of convex ones, for the relief of thoſe whoſe ſight is defective in the contrary extreme, though we find no trace of this improvement. From this time, though both convex and concave lenſes were ſufficiently common, yet no attempt was made to form a teleſcope by a combination of them, till the end of the 16th century. Deſcartes conſiders JAMES METIUS, a perſon who was no mathematician, though his father and brother had applied to thoſe ſciences, as the firſt conſtructor of a teleſcope; and ſays, that as he was amuſing himſelf with making mirrors and burning-glaſſes, he caſually

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ſually thought of looking through two of his lenſes at a time; and that happening to take one that was convex and another that was concave, and happening alſo to hit upon a pretty good adjuſtment of them, he found, that, by looking through them, diſtant objects appeared very large and diſtinct. In fact, without knowing it, he had made a teleſcope.

166. Others ſay, that this great diſcovery was firſt made by JOHN LIPPERSHEIM, a maker of ſpectacles at Middleburg, or rather by his children; who, like Metius, were diverting themſelves with looking through two glaſſes at a time, and placing them at different diſtances from one another. But BORELLUS, the author of a book entitled, *De vero teleſcopii inventore*, gives this honour to ZACHARIAS JOANNIDES or JANSEN, another maker of ſpectacles at the ſame place, who made the firſt teleſcope in 1590; and it ſeems now to be the general opinion, that this account of Borellus is the moſt probable. Indeed, his account of the diſcovery of teleſcopes is ſo circumſtantial, and ſo well authenticated, that it does not ſeem poſſible to call it in queſtion. It is not true, he ſays, that this great diſcovery was made by a perſon who was no philoſopher: for Zacharias Janſen was a diligent inquirer into nature; and being engaged in theſe purſuits, he was trying what uſes could be made of lenſes for thoſe purpoſes, when he fortunately hit upon the conſtruction.

167. This ingenious mechanic and philoſopher had no ſooner found the arrangement of glaſſes that produced the effect he deſired, than he incloſed them in a tube, and ran with his inſtrument to prince Maurice; who, immediately conceiving that it might be of uſe to him in his wars, deſired the author to keep it a ſecret. But this was impoſſible; and ſeveral perſons in that city immediately began to make and ſell teleſcopes. One of the moſt diſtinguiſhed of theſe was JOHN LAPREY, called *Lipperſheim* by Sirturus. By him ſome perſon in Holland being very early ſupplied with a teleſcope, he paſſed with many for the inventor; but both Metius above-mentioned, and Cornelius Drebell of Alcmaer, in Holland, applied to the inventor himſelf in 1620; as did alſo Galileo, and many others. The firſt teleſcope made by Janſen did not exceed 15 or 16 inches in length; but Sirturus, who ſays that he had ſeen it and made uſe of it, thought it the beſt that he had ever examined.

168. JANSEN, having a philoſophical turn, applied his inſtrument to ſuch purpoſes as he had in view when he hit upon the conſtruction. Directing it towards celeſtial objects, he diſtinctly viewed the ſpots on the ſurface of the moon; and diſcovered many new ſtars, particularly 7 pretty conſiderable ones in the Great Bear. His ſon, John Zacharias, noted the lucid circle near the limb of the moon, from whence ſeveral bright rays ſeem to dart in different directions; and he ſays, that the full moon, viewed through this inſtrument, did not appear flat, but was evidently ſpherical, the middle part being prominent. Jupiter alſo, he ſays, appeared round, and rather ſpherical; and ſometimes he perceived two, ſometimes three or four ſmall ſtars, a little above or below him; and, as far as he could obſerve, they performed revolutions round him. This was probably the firſt obſervation of the ſatellites of Jupiter.

169. One FRANCIS FONTANA, an Italian, alſo claims the invention; but he did not pretend to have made it before 1608, and it is well known that the inſtruments were made and ſold in Holland ſome time before.

170. Some ſay that GALILEO was the inventor of teleſcopes; but he himſelf acknowledges that he firſt heard of the inſtrument from a German; but he ſays, that being informed of nothing more than the effects of it, firſt by common report, and a few days after by a French nobleman, J. BADOVERE, at Paris, he himſelf diſcovered the conſtruction, by conſidering the nature of refraction: and thus he had much more real merit than the inventor himſelf. The account of what Galileo actually did in this buſineſs is circumſtantially related by the author of his life, prefixed to the 4to edition of his works, printed at Venice in 1744. About April or May 1609, it was reported at Venice, where Galileo (who was profeſſor of mathematics in the univerſity of Padua) then happened to be, that a Dutchman had preſented to prince Maurice of Naſſau a certain optical inſtrument, by means of which diſtant objects appeared as if they were near; but no farther account of the diſcovery had reached that place, though this was near 10 years after the firſt diſcovery. Struck, however, with this account, Galileo inſtantly returned to Padua, conſidering what kind of an inſtrument this muſt be. The night following, the conſtruction occurred to him; and the day after, putting the parts of the inſtrument together, as he had previouſly conceived of it, and notwithſtanding the imperfection of the glaſſes that he could then procure, the effect anſwered his expectation, as he acquainted his friends at Venice, to which place he ſix days afterwards carried another and a better inſtrument, and where, from ſeveral eminences, he ſhowed to ſome of the principal ſenators of that republic a variety of diſtant objects, to their very great aſtoniſhment. When he had made farther improvements in the inſtrument, he made a preſent of one of them to the Doge, Leonard Donati, and of one to each of the ſenators of Venice; giving along with the inſtrument a written paper, in which he explained the ſtructure and wonderful uſes that might be made of it both by land and at ſea. In return, the republic, on the 25th of Auguſt, the ſame year, more than tripled his ſalary as profeſſor.

171. GALILEO, directing his tube towards the moon, found that the ſurface of it was diverſified with hills and valleys, like the earth. He alſo diſcovered that the *via lactea* and *nebulæ* conſiſted of a collection of fixed ſtars, which, on account either of their vaſt diſtance or extreme ſmallneſs, were inviſible to the naked eye. He likewiſe obſerved innumerable fixed ſtars, diſperſed over the face of the heavens, which had been unknown to all the ancients; and examining Jupiter with a better inſtrument than any he had made before, he found that he was accompanied by four ſtars, which performed periodical revolutions round him, and which, in honour of the MEDICI, he called *Medicean planets*. This diſcovery he made in Jan. 1610,

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1610, N. S. and in March, he published an account of all his discoveries, in his *Nuncius Sidereus*, printed at Venice, and dedicated to Cosmo, great duke of Tuscany, who, by a letter dated 10th July 1610, invited him to quit Padua, and assigned him an ample stipend, as primate and extraordinary professor at Pisa, but without any obligation to read lectures, or to reside. The extraordinary discoveries contained in the Nuncius Sidereus, which was quickly reprinted in Germany and France, were the cause of much debate among the astronomers; many of whom could not credit Galileo's account, while others ridiculed his discoveries as fictions or illusions. Some could not be prevailed upon even to look through a telescope; so devoted were they to the system of Aristotle. But when it was found vain to oppose the evidence of sense, some affirmed that the invention was taken from Aristotle; and quoting his writings, in which he mentions stars seen in the day-time from the bottom of a deep well, said, that the well corresponded to the tube of the telescope, and that the vapours which arose from it gave the hint of putting glasses into it; and that in both cases the sight is strengthened by the transmission of the rays through a thick and dark medium. Galileo himself tells this story with humour; comparing such men to alchymists, who pretend that the art of making gold was known to the ancients, but lay concealed under the fables of the poets.

172. In July 1610, Galileo being still at Padua, and getting an imperfect view of Saturn's ring, imagined that that planet consisted of three parts; and therefore, in the account which he gave of this discovery to his friends, he calls it *planetam tergeminum*. He also observed some spots on the face of the sun: but did not then publish his discovery; partly for farther irritating the obstinate Aristotelians, and partly to make more exact observations on this remarkable phenomenon. He therefore contented himself with communicating his discovery to some of his friends at Padua and Venice, among whom was F. Paul. This delay, however, was the cause of this discovery being contested with him by the famous SCHEINER, who likewise made the same observation in Oct. 1611, and anticipated Galileo in the publication of it. About the end of August, Galileo left Padua and went to Florence; and in Nov. following he was satisfied, that from Sept. Venus had been continually increasing in bulk, and that she changed her phases like the moon. About the end of March 1611, Galileo went to Rome, where he gratified the cardinals and the chief nobility with a view of the new wonders he had discovered in the heavens, and among others the solar spots. From these discoveries Galileo obtained the name of LYNCEUS, after one of the Argonauts, who was famous in antiquity for the acuteness of his sight; and the marquis of Monticelli instituted an academy, with the title of *Lincei* and made him a member of it. Galileo enjoyed the use of his telescope 29 years, continually enriching astronomy with his observations: but by too close application during the nocturnal air, his eyes grew gradually weaker, till in 1639 he became totally blind; a calamity which, however, neither broke his spirits, nor interrupted the course of his studies. The first telescope that Galileo constructed magnified only three times; but soon after he made another which magnified 18 times; and afterwards, with great trouble and expense, he constructed one that magnified 33 times; and with this he discovered the satellites of Jupiter and the spots of the sun.

173. Although Galileo had great merit with respect to telescopes, yet he did not explain the *rationale* of the instrument. This important service to science was performed by JOHN KEPLER, whose name is famous in the annals of philosophy, especially by his discovery of the great law of motion respecting the heavenly bodies; which is, that the squares of their periodical times are as the cubes of their distances from the body about which they revolve; a proposition which, however, was not demonstrated before Sir Isaac Newton. Kepler was astronomer to several emperors of Germany; he was the associate of the celebrated astronomer Tycho Brahe, and the master of Descartes. He made several discoveries relating to the nature of vision; and not only explained the *rationale* of the telescope which he found in use, but also pointed out methods of constructing others of superior powers and more commodious use. Kepler first gave a clear explication of the effects of lenses in making the rays of a pencil of light converge or diverge. He showed that a plano-convex lens makes rays parallel to its axis to meet at the distance of the diameter of the sphere of convexity; but that if both sides of the lens be equally convex, the rays will have their focus at the distance of the radius of the circle, corresponding to that degree of convexity. But he did not investigate any rule for the foci of lenses unequally convex. To CAVALLIERI we owe this investigation. He laid down this rule: As the sum of both the diameters is to one of them, so is the other to the distance of the focus. All these rules concerning convex lenses are applicable to those that are concave; with this difference, that the focus is on the contrary side of the glass.

174. The principal effects of telescopes depend upon these plain maxims, *viz.* That objects appear larger in proportion to the angles which they subtend at the eye; and the effect is the same whether the pencils of rays by which objects are visible to us come directly from the objects themselves, or from any place nearer to the eye, where they may have been united so as to form an image of the object; because they issue again from those points where there is no real substance, in certain directions, in the same manner as they did from the corresponding points in the objects themselves. All that is effected by a telescope is, first to make such an image of a distant object, by means of a lens or mirror; and then to assist the eye in viewing that image as near as possible; so that the angle, which it shall subtend at the eye, may be very large compared with the angle which the object itself would subtend. This is done by an eye-glass, which so refracts the pencils of rays, as that they may afterwards be brought to their several foci by the natural humours of the eye. If, instead of an eye-glass, an object be looked at through a small hole in a thin plate or piece of paper, held close to the eye, it may be viewed very near to the eye, and, at the same distance, the apparent magnitude

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tude of the object will be the same in both cases. But as very few rays can be admitted through a small hole, there is seldom light sufficient to view an object to advantage in this way.

175. Such was the telescope first discovered and used by astronomers; and it is of a much more difficult construction than some other kinds that have been invented since. The great inconvenience attending it is, that the field of view is exceedingly small. For since the pencils of rays enter the eye very much diverging from one another, but few of them can be intercepted by the pupil; this inconvenience increases with the magnifying power of the telescope, so that philosophers at this day cannot help wondering that it was possible, with such an instrument, for Galileo and others to have made the discoveries they did. It must have required incredible patience and address. No other telescope, however, than this, was so much as thought of, for many years after the discovery. Descartes, who wrote 30 years after, mentions no others as actually constructed. To KEPLER we are indebted for the invention of the *astronomical telescope*, the best adapted for viewing the heavenly bodies. The *rationale* of this instrument is explained, and the advantages of it are clearly pointed out, by this philosopher, in his *Catoptrics*; although he never actually reduced his excellent theory into practice. Montucla conjectures that he was not aware of the great increase of the field of view, and that being engaged in other pursuits, he might think it of no importance to construct an instrument, which could do little more than answer the same purpose with those of which he was already possessed. Kepler's new scheme of a telescope was however soon executed. The first who made an instrument of this construction was F. Scheiner, who described it in his *Rosa Ursina*, published in 1630. If, says he, you insert two similar lenses (both convex) in a tube, and place your eye at a convenient distance, you will see all terrestrial objects inverted, indeed, but magnified and very distinct, with a considerable extent of view. He subjoins an account of a telescope of a different construction, with two convex eye-glasses, which reverse the images, and make them appear in their natural position. This disposition of the lenses had also been pointed out by Kepler. F. RHEITA soon after hit upon a better construction, using 3 eye-glasses instead of two. This was named the *terrestrial telescope*, being chiefly used for terrestrial objects.

176. The first and last of these constructions are those which are now in common use. The proportion in which the first telescope magnifies, is as the focal length of the object-glass to that of the eye-glass.—The only difference between the *Galilean telescope* and the other is, that the pencils by which the extremities of any object are seen in this case, enter the eye diverging; whereas, in the other, they enter it converging; but if the sphere of concavity in the eye-glass of the Galilean telescope be equal to the sphere of convexity in the eye-glass of another telescope, their magnifying power will be the same. The concave eye-glass, however, being placed between the object-glass and its focus, the Galilean telescope will be shorter than the other by twice the focal length of the eye-glass. Consequently, if the length of the telescopes be the same, the Galilean will have the greater magnifying power. The invention of the telescope and microscope having incited mathematicians to a more careful study of DIOPTRICS; and this having soon become almost a perfect science, by the discovery of SNELLIUS, many different constructions were offered to the public. HUYGENS was particularly eminent for his systematic knowledge of the subject, and is the author of the chief improvements which have been made on all the dioptrical instruments till the time of Mr Dollond's discovery. He was well acquainted with the theory of aberration arising from the spherical figure of the glasses, and has showed several ingenious methods of diminishing them by proper constructions of the eye-pieces. He first showed the advantages of two eye-glasses on the astronomical telescope and double microscope, and gave rules for this construction, which both enlarges the field and shortens the instrument. Mr Dollond adapted his construction to the terrestrial telescope of Kheita; and his five eye-glasses are nothing but the Huygenian eye-piece doubled. This construction has been too hastily given up by the artists of the present day for another, also of Mr Dollond's, of four glasses. Vision is more distinct in the Galilean telescope than in the other, owing perhaps in part to there being no intermediate image between the eye and the object. Besides, the eye-glass being very thin in the centre, the rays will be less liable to be distorted by irregularities in the substance of the glass. Whatever be the cause, we can sometimes see Jupiter's satellites very clearly in a Galilean telescope not more than 20 or 24 inches long; when one of 4 or 5 feet, of the common sort, will hardly make them visible.

177. F. RHEITA also invented a *binocular telescope*, which F. Cherubin of Orleans endeavoured to bring into use. It consists of two telescopes fastened together, and made to point to the same object. When this instrument is well fixed, the object appears larger and nearer to the eye, when it is seen through both the telescopes, than through one of them only, though they have the very same magnifying power. But this is only an illusion, occasioned by the stronger impression that two equal images, equally illuminated, make upon the eye. This advantage, however, is counterbalanced by the inconvenience attending the use of it.

178. The first who distinguished themselves in grinding telescopic glasses were two Italians, EUSTACE DIVINI at Rome, and CAMPANI at Bologna, whose fame was much superior to that of Divini, or that of any other person of his time; though Divini pretended, that, in all the trials that were made with their glasses, his, of a great focal distance, performed better than those of Campani, and that his rival was not willing to try them fairly, *viz.* with equal eye-glasses. Campani, however, really excelled Divini, both in the goodness and the focal length of his object-glasses. It was with telescopes made by Campani that CASSINI discovered the nearest satellites of Saturn. They were made by the express order of Lewis XIV. and were of 86, 100, and 136 Parisian feet focal length. Campani sold his lenses

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Fig. 2.

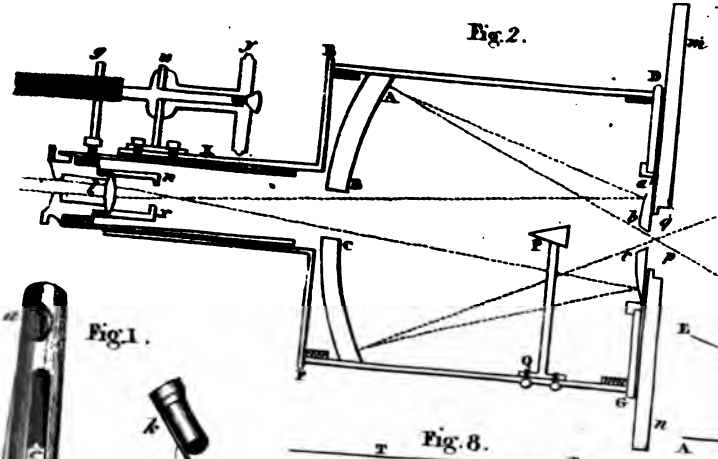
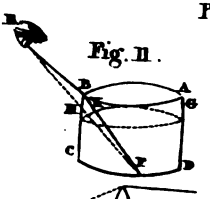


Fig. 11.



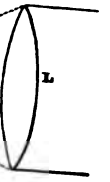


Fig. 1.

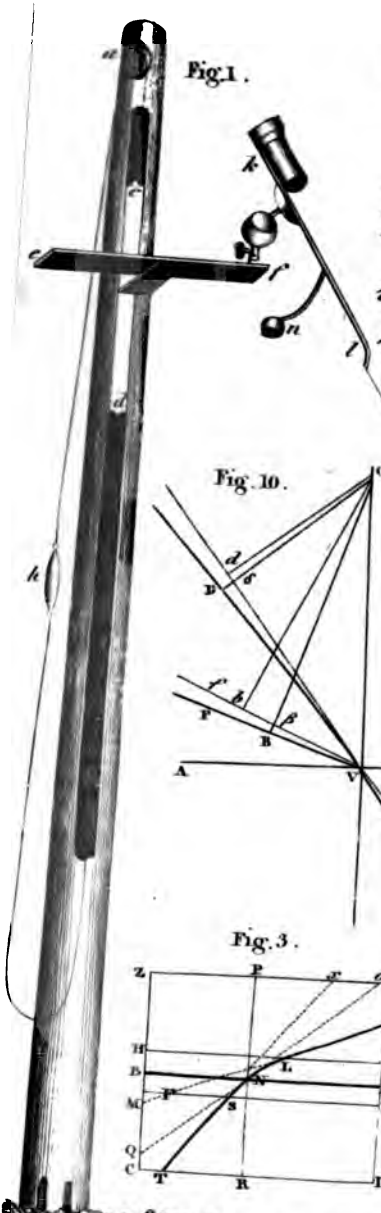


Fig. 12.

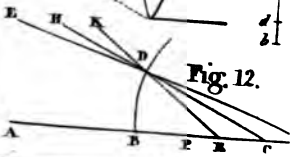


Fig. 8.

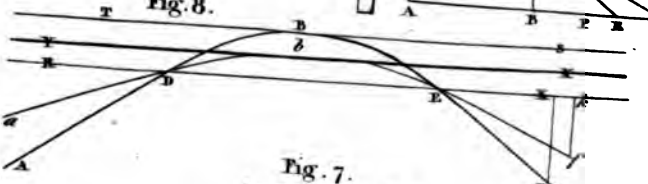


Fig. 7.

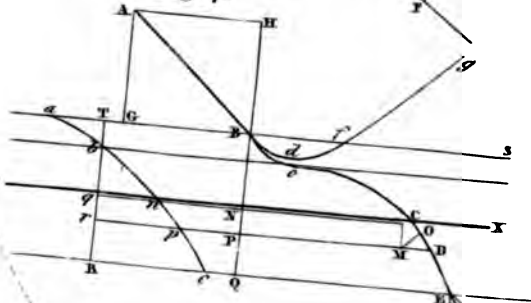
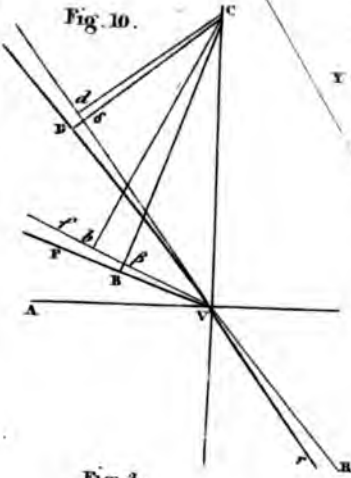


Fig. 10.



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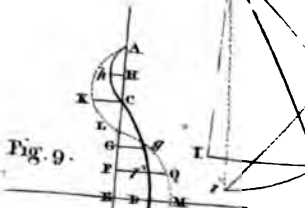

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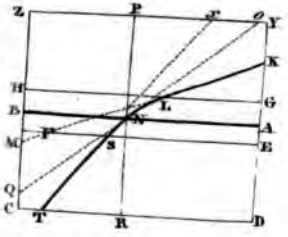
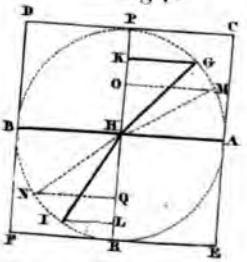
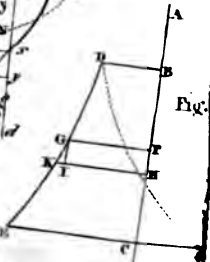


Fig. 4.





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ſes at a high price, and took every poſſible method to keep his art a ſecret. His laboratory was inacceſſible till after his death; when it was purchaſed by Pope Benedict XIV. who made a preſent of it to the *Inſtitute* of that city; and by the account which M. Fougeroux has given of what he could diſcover from it, we learn, that (except a machine, which M. Campani conſtructed, to work the baſons on which he ground his glaſſes) the goodneſs of his lenſes depended upon the clearneſs of his glaſs, his Venetian tripoli, the paper with which he poliſhed his glaſſes, and his great ſkill and addreſs as a workman. He made few lenſes of a very great focal diſtance; and having the misfortune to break one of 141 feet in two pieces, he took incredible pains to join the two parts together, which he did at length effectually, ſo that it was uſed as if it had been entire.

179. SIR PAUL NEILLE, Dr Hooke ſays, made teleſcopes of 36 feet, pretty good, and one of 50. Afterwards Mr REIVE, and then Mr Cox, who were the moſt celebrated in England as grinders of optic glaſſes, made ſome good ones of 50 and 60 feet focal diſtance, and Mr Cox made one of 100. BORELLI alſo, in France, made object glaſſes of a great focal length, one of which he preſented to the Royal Society. With reſpect to the focal length of teleſcopes, theſe and all others were far exceeded by M. AUZOUT, who made one object-glaſs of 600 feet focus; but he was never able to make any uſe of it. HARTSOEKER is even ſaid to have made ſome of a ſtill greater focal length; but this ingenious mechanic, finding it impoſſible to make uſe of object-glaſſes the focal diſtance of which was much leſs than this, when they were incloſed in a tube, contrived a method of uſing them without a tube, by fixing them at the top of a tree, a high wall, or the roof of a houſe."

180. Mr HUYGENS alſo made conſiderable improvements in the method of uſing an object-glaſs without a tube. He placed it at the top of a very long pole, having previouſly incloſed it in a ſhort tube, which was made to turn in all directions, by a ball and ſocket. The axis of this tube, he could command with a fine ſilken ſtring, ſo as to bring it into a line with the axis of another ſhort tube, which he held in his hand, and which contained the eye-glaſs. He thus could uſe object glaſſes of the greateſt magnifying power, at whatever altitude his object was, and even in the zenith, provided his pole was as long as his teleſcope; and, to adapt it to the view of objects of different altitudes, he had a contrivance, by which he could raiſe or depreſs a ſtage that ſupported his object-glaſs at pleaſure.

181. M. DE LA HIRE made ſome improvement in this method of managing the object-glaſs, fixing it in the centre of a board, and not in a tube; but as it is not probable that this method will ever be made uſe of, ſince the diſcovery of both reflecting and achromatic teleſcopes, which are now brought to great perfection, we need not deſcribe this apparatus minutely; but only give a figure of Mr Huygens's pole, which, with a very ſhort explanation, will be ſufficient. In *fig.* 1. *Pl.* CCLI. *a* repreſents a pulley, by the help of which a ſtage *c*, *d*, *e*, *f*, (that ſupports the object-glaſs *k*, and the apparatus belonging to it), may be raiſed higher or lower at pleaſure, the whole being counterpoiſed by the weight *h*, faſtened to a ſtring *gi*; *n* is a weight, by means of which the centre of gravity of the apparatus belonging to the object-glaſs is kept in the ball and ſocket, ſo that it may be eaſily managed by the ſtring *l u*, and its axis brought into a line with the eye-glaſs at *o*. When it was very dark, M. Huygens was obliged to make his object-glaſs viſible by a lantern *y*, ſo conſtructed as to throw the rays of light in a parallel direction up to it.

182. M. AUZOUT, in a paper delivered to the Royal Society, obſerved, that the apertures which the object-glaſſes of *refracting teleſcopes* can bear with diſtinctneſs, are in about a ſub-duplicate proportion to their lengths; and upon this ſuppoſition he drew up a table of the apertures proper for object-glaſſes of a great variety of focal lengths, from 4 inches to 400 feet. Upon this occaſion, Dr Hooke obſerved, that the ſame glaſs will bear a greater or leſs aperture, according to the leſs or greater light of the object. If, for inſtance, he was viewing the ſun, or Venus, or any of the fixed ſtars, he uſed ſmaller apertures: but if he wanted to view the moon by day-light; or Saturn, Jupiter, or Mars, by night; he uſed a larger aperture.

183. But the merit of all thoſe improvements was in a manner cancelled by the diſcovery of the much more commodious REFLECTING TELESCOPE. For a refracting teleſcope, even of 1000 feet focus, ſuppoſing it poſſible to be made uſe of, could not be made to magnify with diſtinctneſs more than 1000 times; whereas a reflecting teleſcope, not exceeding 9 or 10 feet, will magnify 1200 times. "It muſt be acknowledged (ſays Dr SMITH in his *Complete Syſtem of Optics*), that Mr JAMES GREGORY of Aberdeen, was the firſt inventor of the reflecting teleſcope." But, according to Dr PRINGLE, MERSENNUS was the man who entertained the firſt thoughts of a reflector. A teleſcope with ſpecula he certainly propoſed to the celebrated Deſcartes many years before Gregory's invention, though indeed in a manner ſo very unſatisfactory, that Deſcartes, who had given particular attention to the improvement of the teleſcope, was ſo far from approving the propoſal, that he endeavoured to convince Merſennus of its fallacy. See TELESCOPE. Dr Smith had not ſeen two letters of Deſcartes to Merſennus on that ſubject.

184. GREGORY, a young man of an uncommon genius, was led to the invention, in ſeeking to correct two imperfections of the common teleſcope: the firſt was its too great length, which made it leſs manageable; the ſecond, the incorrectneſs of the image. Mathematicians had demonſtrated, that a pencil of rays could not be collected in a ſingle point of a ſpherical lens; and alſo, that the image tranſmitted by ſuch a lens would be in ſome degree incurvated. Theſe inconveniences he believed would be obviated by ſubſtituting for the object-glaſs a metallic ſpeculum, of a parabolic figure, to receive the image, and to reflect it towards a ſmall ſpeculum of the ſame metal: this again was to return the image to an eye-glaſs placed behind the great ſpeculum, which for that purpoſe was to be perforated in its centre. This

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conſtruction he publiſhed in 1663, in his *Optica Promota*. But as Gregory was endowed with no mechanical dexterity, nor could find any workman capable of realizing his invention, after ſome fruitleſs attempts in that way, he was obliged to give up the purſuit: and probably, had not ſome new diſcoveries been made in light and colours, a refracting teleſcope would never more have been thought of, conſidering the difficulty of the execution, and the ſmall advantages that could accrue from it, deducible from the principles of optics then known.

185. But Newton, whoſe genius for experimental knowledge was equal to that for geometry, happily interpoſed, and ſaved this noble invention from well nigh periſhing in its infant ſtate. He likewiſe at an early period of life had applied himſelf to the improvement of the teleſcope; but imagining that Gregory's ſpecula were neither very neceſſary, nor likely to be executed, he began with proſecuting the views of Deſcartes, who aimed at making a more perfect image of an object, by grinding lenſes, not to the figure of a ſphere, but to that of a conic ſection. While he was thus employed, three years after Gregory's publication, he happened to examine the colours formed by a priſm, and having by that ſimple inſtrument diſcovered the different refrangibility of the rays of light, he perceived that the errors of teleſcopes, ariſing from that cauſe alone, were ſome hundred times greater than thoſe occaſioned by the ſpherical figure of lenſes. This circumſtance forced Newton to fall into Gregory's track, and to turn his thoughts to reflectors. "The different refrangibility of the rays of light (ſays he, in a letter to Mr Oldenburg, ſecretary to the Royal Society, dated Feb. 1672) made me take reflections into conſideration; and finding them regular, ſo that the angle of reflection of all ſorts of rays was equal to the angle of incidence, I underſtood that, by their mediation, optic inſtruments might be brought to any degree of perfection imaginable, providing a reflecting ſubſtance could be found which would poliſh as finely as glaſs, and reflect as much light as glaſs tranſmits, and the art of communicating to it a parabolic figure be alſo obtained. Amidſt theſe thoughts I was forced from Cambridge by the intervening plague, and it was more than two years before I proceeded further." If Newton, then, was not the firſt inventor of the reflecting teleſcope, he was the main and *effectual* inventor. By his admirable genius, he fell upon this new property of light; and thereby found, that all lenſes, of whatever figure, would be affected more or leſs with ſuch priſmatic aberrations of the rays as would be an inſuperable obſtacle to the perfection of a dioptric teleſcope.

186. About the end of 1668, or beginning of 1669, Newton, not relying on any artificer for making his ſpecula, ſet about the work himſelf, and early in 1672 completed two ſmall reflecting teleſcopes. In theſe he ground the great ſpeculum into a ſpherical concave, but found himſelf unable to accompliſh the parabolic form. In the letter that accompanied one of theſe inſtruments, which he preſented to the Society, he writes, "that though he then deſpaired of performing that work, (to wit, the parabolic figure of the great ſpeculum) by geometrical rules, yet he doubted not but that the thing might in ſome meaſure be accompliſhed by mechanical devices."

187. Not leſs did the difficulty appear to find a metallic ſubſtance that would be of a proper hardneſs, have the feweſt pores, and receive the ſmoothest poliſh: a difficulty which he deemed almoſt unſurmountable, when he conſidered, that every irregularity in a reflecting ſurface would make the rays of light ſtray 5 or 6 times more out of their due courſe, than the like irregularities in a refracting one. In another letter written ſoon after, he tells the ſecretary, "that he was very ſenſible, that metal reflects leſs light than glaſs tranſmits; but as he had found ſome metallic ſubſtances to be more ſtrongly reflective than others, to poliſh better, and to be freer from tarniſhing than others, ſo he hoped that there might in time be found out ſome ſubſtances much freer from theſe inconveniences than any yet known." Newton therefore laboured till he found a compoſition that anſwered in ſome degree, and preſented a reflecting teleſcope to the Royal Society; from whom he received ſuch thanks as were due to ſo curious and valuable a preſent. And Huygens, one of the greateſt geniuſes of the age, and a diſtinguiſhed improver of the refractor, no ſooner was informed by Mr Oldenburg of the diſcovery, than he wrote an anſwer, "that it was an admirable teleſcope; and that Mr Newton had well conſidered the advantage which a concave ſpeculum had above convex glaſſes in collecting the parallel rays, which, according to his own calculation, was very great; hence that Mr Newton could give a far greater aperture to that ſpeculum, than to an object-glaſs of the ſame diſtance of focus, and conſequently much more magnify in his way than by an ordinary teleſcope: Beſides, that by the reflector he avoided an inconvenience inſeparable from object-glaſſes which was the obliquity of both their ſurfaces, which vitiated the refraction of the rays that paſs towards the ſides of the glaſs, and did more hurt than men were aware of: Again, that by the mere reflection of the metalline ſpeculum there were not ſo many rays loſt as in glaſſes, which reflected a conſiderable quantity by each of their ſurfaces, and, beſides, intercepted many of them by the obſcurity of their matter: That the main buſineſs would be, to find a matter for this ſpeculum that would bear as good a poliſh as glaſs."

188. M. Huygens was not ſatisfied with thus expreſſing to the Society his high approbation of Newton's invention; but drew up a favourable account of the new teleſcope, which he cauſed to be publiſhed in the *Journal de Sçavans* for 1672, by which it was ſoon known over Europe. But how excellent ſoever the contrivance was: how well ſoever ſupported and announced to the public; yet whether it was that the artiſts were deterred by the difficulty and labour of the work, or that the diſcoveries even of a Newton were not to be exempted from the general fatality attending great and uſeful inventions, *the making a ſlow and vexatious progreſs to the authors*; the fact is, that,

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that, excepting an unſucceſsful attempt which the ſociety made, by employing an artificer to imitate the Newtonian conſtruction, but upon a larger ſcale, and a diſguiſed Gregorian teleſcope, ſet up by CASSEGRAIN abroad as a rival to Newton's, and that in theory only (for it was never put in execution by the author), no reflector was heard of for near half a century after. But a reflecting teleſcope was at laſt produced to the world, of the Newtonian conſtruction, by Dr HADLEY, which the author had the ſatisfaction to find executed in ſuch a manner, as left no room to fear that the invention would any longer continue in obſcurity.

189. This memorable event was owing to the genius, dexterity, and application, of Dr HADLEY, the inventor of the REFLECTING QUADRANT, another moſt valuable inſtrument. The two teleſcopes which Newton had made were but ſix inches long, were held in the hand for viewing objects, and in power were compared to a ſix-feet refractor; whereas Hadley's was above five feet long, was provided with a well-contrived apparatus for managing it, and equalled in performance the famous *aerial teleſcope* of Huygens of 123 feet in length. Excepting as to the manner of making the ſpecula, we have, in the tranſactions of 1723, a complete deſcription, with a figure, of this teleſcope, together with that of the machine for moving it; but, by a ſtrange omiſſion, *Newton's* name is not once mentioned in that paper, ſo that any perſon not acquainted with the hiſtory of the invention, and reading that account only, might be apt to conclude that Hadley had been the ſole inventor. The ſame celebrated artiſt, after finiſhing two teleſcopes of the Newtonian conſtruction, accompliſhed a 3d in the Gregorian way; but, it would ſeem, leſs ſucceſsfully, by Dr Smith's declaring ſo ſtrongly in favour of the other. Dr Hadley inſtructed Mr MOLYNEUX and the Rev. Dr BRADLEY; and when theſe gentlemen had made a ſufficient proficiency in the art, being deſirous that theſe teleſcopes ſhould become more public, they liberally communicated to ſome of the principal inſtrument-makers of London the knowledge they had acquired from him. Such ſcholars ſoon advanced beyond their maſters, and completed reflectors by other and better methods than what had been taught them.

190. Mr JAMES SHORT, as early as 1734, had ſignaliſed himſelf at Edinburgh by his work of this kind. Mr MACLAURIN wrote that year to Dr Jurin, "that Mr Short, who had begun with making glaſs ſpecula, was then applying himſelf to improve the metallic; and that, by taking care of the figure, he was enabled to give them larger apertures than others had done; and that upon the whole they ſurpaſſed in perfection all that he had ſeen of other workmen." He added, "that Mr Short's teleſcopes were all of the Gregorian conſtruction; and that he had much improved that excellent invention." This character of excellence Mr Short maintained to the laſt; as he had been well grounded both in the geometrical and philoſophical principles of optics, and upon the whole was a moſt intelligent perſon in whatever related to his profeſſion. It was ſuppoſed he had fallen upon a method of giving the parabolic figure to his great ſpeculum: a point of perfection which Hadley had never attempted, either in his Newtonian or Gregorian teleſcope. Mr Short, indeed, ſaid he had acquired that faculty, but never would tell by what means he effected it; ſo that the ſecret of working that configuration died with that ingenious artiſt. Mr MUDGE, however, hath lately realiſed the expectation of Sir Iſaac Newton, who above 100 years ago, preſaged that the public would one day poſſeſs a parabolic ſpeculum, not accompliſhed by mathematical rules, but by mechanical devices.

191. This *deſideratum* was not the only want ſupplied by this gentleman: he taught us likewiſe a better compoſition of metals for the ſpecula, how to grind them better, and how to give them a finer poliſh; and the poliſh, he remarks, was the moſt difficult and eſſential of the whole operation. "In a word, (ſays Sir JOHN PRINGLE,) I am of opinion, there is no optician in this great city (which hath been ſo long and ſo juſtly renowned for ingenious and dextrous makers of every kind of mathematical inſtruments) ſo partial to his own abilities as not to acknowledge, that, however ſome parts of the mechanical proceſs now diſcloſed might have been known before any individuals of the profeſſion, yet that Mr MUDGE hath opened to them all ſome new and important lights, and upon the whole hath greatly improved the art of making reflecting teleſcopes."

192. The late Rev. and ingenious JOHN EDWARDS devoted much of his time to the improvement of reflecting teleſcopes, and brought them to ſuch perfection, that Dr MASKELYNE, the aſtronomer royal, found teleſcopes conſtructed by him to ſurpaſs in brightneſs, and other eſſentials, thoſe of the ſame ſize made by the beſt artiſts in London. The chief excellence of his teleſcopes ariſes from the compoſition, which, from various trials on metals and ſemimetals, he diſcovered for the ſpecula, and from the true parabolic figure, which, by long practice, he had found a method of giving them, preferable to any that was known before him. His directions for the compoſition of ſpecula, and for caſting, grinding, and poliſhing them, were publiſhed, by order of the commiſſioners of longitude, at the end of the *Nautical Almanack* for 1787: To which is alſo annexed his account of the cauſe and cure of the tremors which particularly affect reflecting teleſcopes more than refracting ones, together with remarks on the ſaid tremors by Dr Maſkelyne. See TELESCOPE.

193. But in conſtructing reflecting teleſcopes of extraordinary magnifying powers, Dr HERSCHEL has diſplayed ſkill and ingenuity ſurpaſſing all his predeceſſors. He has made them from 7, 10, 20, to even 40 feet in length; and with the inſtrument of theſe latter dimenſions he is now employed in making diſcoveries in aſtronomy. Of its conſtruction, magnifying powers, and the curious collection of machinery, by which it is ſupported and moved from one part of the heavens to another, accounts will be found under TELESCOPE.

194. The greateſt improvement in *refr. & ng* teleſcopes hitherto made public is that of Mr DOLLOND, of which an account has been given above. (See § 31-40.) But beſides the obligation we are

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under to him for correcting the aberration of the rays of light in the focus of object-glaſſes, ariſing from their different refrangibility, he made another conſiderable improvement, viz. by correcting both this kind of aberration, and alſo that which ariſes from the ſpherical form of lenſes, by an expedient of a very different nature; viz. increaſing the number of eye-glaſſes. If any perſon, ſays he, would have the viſual angle of a teleſcope to contain 20° the extreme pencils of the field muſt be bent or refracted in an angle of 10°; which, if it be performed by one eye-glaſs, will cauſe an aberration from the figure, in proportion to the cube of that angle; but if two glaſſes are ſo proportioned and ſituated as that the refraction may be equally divided between them, they will each of them produce a refraction equal to half the required angle; and therefore, the aberration being in proportion to the cube of half the angle taken twice over, will be but a 4th part of that which is in proportion to the cube of the whole angle; becauſe twice the cube of 1 is but ¼ of the cube of 2; ſo the aberration from the figure, where two eye-glaſſes are rightly proportioned, is but a 4th of what it muſt unavoidably be, where the whole is performed by a ſingle eye-glaſs. By the ſame reaſoning, when the refraction is divided between three glaſſes, the aberration will be found to be but the ninth part of what would be produced from a ſingle glaſs; becauſe three times the cube of 1 is but one 9th of the cube of 3. Whence it appears, that by increaſing the number of the eye-glaſſes, the indiſtinctneſs which is obſerved near the borders of the field of a teleſcope may be very much diminiſhed, though not entirely taken away.

195. The method of correcting the errors ariſing from the different refrangibility of light is of a different conſideration. For, whereas the errors from the figure can only be diminiſhed in a certain proportion according to the number of glaſſes, in this they may be entirely corrected by the addition of only one glaſs; as we find in the aſtronomical teleſcope, that two eye-glaſſes, rightly proportioned, will cauſe the edges of objects to appear free from colours, quite to the border of the field. Alſo in the day teleſcope, where no more then two eye-glaſſes are abſolutely neceſſary for erecting the object, we find, that by the addition of a 3d rightly ſituated, the colours, which would otherwiſe make the image confuſed, are entirely removed. This, however, is to be underſtood with ſome limitation; for if the glaſſes exceed a certain length, the colours may be ſpread too wide to be admitted through the pupil of the eye; which is the cauſe, that in long teleſcopes with 3 eye-glaſſes, the field is always greatly contracted.

196. Theſe conſiderations firſt ſet Mr Dollond on contriving how to enlarge the field, by increaſing the number of eye-glaſſes without any hindrance to the diſtinctneſs or brightneſs of the image; and though others had been about the ſame work before, yet, obſerving that ſome five-glaſs teleſcopes then made would admit of farther improvement, he endeavoured to conſtruct one with the ſame number of glaſſes in a better manner; which was allowed by the beſt judges to be a conſiderable improvement on the former. Thus encouraged, he reſolved to try if he could make ſome farther enlargement of the field by the addition of another glaſs, and by placing and proportioning the glaſſes in ſuch a manner as to correct the aberrations, without detriment to the diſtinctneſs. At laſt he obtained as large a field as is neceſſary, even in the longeſt teleſcopes that can be made. Theſe teleſcopes with ſix glaſſes having been well received, and ſome of them being gone into foreign parts, the author fixed the date of his invention, in a letter, addreſſed to Mr Short, which was read to the Royal Society, March 1. 1753.

197. Various attempts were made about this time, to ſhorten and otherwiſe improve teleſcopes. Among theſe we muſt mention that of Mr Caleb Smith, who thought he had found it poſſible to rectify the errors which ariſe from the different degrees of refrangibility, on the principle that the ſines of refraction, or rays differently refrangible, are to one another in a given proportion, when their ſines of incidence are equal; and he propoſed, for this purpoſe to make the ſpeculums of glaſs inſtead of metal, the two ſurfaces having different degrees of concavity. But his ſcheme was never executed; nor is it probable, for reaſons which have been mentioned, that any advantage could be made of it.

198. To Mr Short we are indebted for the excellent contrivance of an *equatorial teleſcope*, or *portable obſervatory*; whereby pretty accurate obſervations may be made with little trouble, by thoſe who have no building adapted to the purpoſe. This inſtrument conſiſts of an ingenious piece of machinery, by the help of which a teleſcope mounted upon it may be directed to any degree of right aſcenſion or declination, ſo that the place of any of the heavenly bodies being known, they may be found without any trouble, even in the day-time. Being made to turn parallel to the equator, any object is eaſily kept in view, or recovered, without moving the eye from its ſituation. By this inſtrument, Mr Short informs us, that moſt of the ſtars of the firſt and ſecond magnitude have been ſeen even at mid-day, and the ſun ſhining bright; as alſo Mercury, Venus, and Jupiter. Saturn and Mars are not ſo eaſy to be ſeen, on account of the faintneſs of their light, except when the ſun is but a few hours above the horizon. This particular effect depends upon the teleſcope excluding almoſt all the light, except what comes from the object itſelf, and which might otherwiſe efface the impreſſion made by its weaker light upon the eye. For the ſame reaſon, ſtars are viſible in the day-time from the bottom of a deep pit. Mr Ramsden has alſo invented a *portable obſervatory* or *equatorial teleſcope*. See Astronomy, *Index*.

199. To enable us to ſee the fixed ſtars in the day-time, it is neceſſary to exclude the extraneous light as much as poſſible. For this reaſon the greater magnifying power of any teleſcope is uſed, the more eaſily a fixed ſtar will be diſtinguiſhed in the day-time; the light of the ſtar remaining the ſame in all magnifying powers of the ſame teleſcope, but the ground upon which it is ſeen becoming darker by increaſing the magnifying power;

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er; and the visibility of a star depends very much upon the difference between its own light and that of the ground upon which it is seen. A fixed star will be very nearly equally visible with telescopes of very different apertures, provided the magnifying power remains the same. If a comet, or any other heavenly body be viewed through this equatorial telescope, properly rectified, it is seen immediately by the help of the same machinery what is its true place in the heavens. Other astronomical problems may also be solved by it, with great ease and certainty. M. Æpinus proposes to bend the tubes of long telescopes at right angles, fixing a plane mirror in the angle, in order to make them more commodious for viewing objects near the zenith of the observer; and he gives particular instructions how to make them in this form, especially when they are furnished with micrometers. A little plane speculum is sometimes placed betwixt the last eye-glass and the eye in the reflecting telescopes, at an angle of 45°, for the same purpose.

200. The invention of Microscopes was not much later than that of telescopes; and, according to Borellus, we are indebted for them to Z. Jansen, and his son. These two instruments, though different in their application, are very similar; as both assist us in the discovery of objects that we must otherwise have remained unacquainted with, by enlarging the angle which they subtend at the eye.

201. The Jansens, however, have not always enjoyed that reputation to which they seem to be entitled, with respect either to the telescope or the microscope. The discovery of the latter has been considered as more uncertain than that of the former. Many say, that microscopes were first used in Germany about 1621. Others affirm, that this instrument was the contrivance of Cornelius Drebell, no philosopher, but a man of ingenuity, who also invented the thermometer. According to Borellius, Zacharias Jansen and his son presented the first microscopes they had constructed to prince Maurice, and Albert archduke of Austria. William Borelli, in a letter to his brother Peter, says, that when he was ambassador in England, in 1619, Cornelius Drebell showed him a microscope, which he said was the same the archduke had given him, and had been made by Jansen himself. This instrument was six feet long, consisting of a tube of gilt copper, an inch in diameter, supported by 3 brass pillars in the shape of dolphins, on a base of ebony, on which the small objects were placed.

202. This microscope was evidently a compound one, or rather something betwixt a telescope and a microscope, what we should now, perhaps, call a Megalascope. It appears from Jamblicus and Plutarch, quoted by Dr Rogers, that the ancients gave such instruments as they used for magnifying small objects the name of *dioptra*. As spectacles were certainly in use long before the invention of telescopes, one can hardly help concluding, that lenses must have been made smaller, and more convex, for the purpose of magnifying minute objects. At what time lenses were made so small as we now use them for magnifying in single microscopes, we have not found. But as this must have been done gradually, the only object of inquiry is the invention of the double or compound microscope; and this is clearly given, by Borellus to Zacharias Jansen, the inventor of the telescope, or his son.

203. The invention of compound microscopes is also claimed by Fontana, who claimed that of telescopes; though he did not publish any account of this invention till 1646, notwithstanding he pretended to have made the discovery in 1618. Eustace Divini made microscopes with two common object-glasses, and two plano-convex eye-glasses joined together on their convex sides so as to meet in a point. The tube in which they were inclosed was as big as a man's leg, and the eye-glasses almost as broad as the palm of a man's hand. Mr Oldenburg, secretary to the royal society, received an account of this instrument from Rome, and read it at a meeting, Aug. 6, 1668. About this period Hartsocker improved single microscopes by using small globules of glass, made by melting them in the flame of a candle, instead of the lenses which had before been used for that purpose. By these he first discovered the *animalcula in semine masculino*, which gave rise to a new system of generation. A microscope of this kind, consisting of a globule of one 10th of an inch in diameter, M. Huygens demonstrated to magnify 100 times; and as it is easy to make them of less than half a line in diameter, they may be made to magnify 300 times. Were it not for the difficulty of applying objects to these magnifiers, the want of light, and the small field of distinct vision, they would certainly have been the most perfect of all microscopes.

204. But no man distinguished himself so much by microscopical discoveries as the famous M. Leeuwenhoek, though he used only single lenses with short foci, preferring distinctness of vision to a large magnifying power. M. Leeuwenhoek's microscopes were all single ones, each of them consisting of a small double convex glass, set in a socket between two silver plates rivetted together, and pierced with a small hole; and the object was placed on the point of a needle, so contrived as to be placed at any distance from the lens. If the objects were solid, he fastened them with glue; and if they were fluid, or required to be spread upon glass, he placed them on a small piece of Muscovy talc, or glass blown very thin, which he afterwards glued to his needle. He had, however, a different apparatus for viewing the circulation of the blood, which he could fix to the same microscopes. The greatest part of his microscopes M. Leeuwenhoek bequeathed to the Royal Society. They were contained in a small Indian cabinet, in the drawers of which were 13 little boxes, in each of which were two microscopes, neatly fitted up in silver; and both the glass and the apparatus were made with his own hands. The glass of all these lenses is exceedingly clear, but none of them magnifies so much as those globules which are often used in other microscopes; but Mr Folkes, who examined them, thought that they showed objects with much greater distinctness, which M. Leeuwenhoek principally valued. His discoveries, however, are to be ascribed not so much to the goodness of his glasses, as to his great judgment, acquired by long experience, in using them. He also

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also excelled in his manner of preparing objects for being viewed to the most advantage.

205. Mr Baker, who also examined M. Leeuwenhoek's microscopes, and made a report concerning them to the Royal Society, found that the greatest magnifier among them enlarged the diameter of an object about 160 times, but that all the rest fell much short of that power; so he concluded that M. Leeuwenhoek must have had other microscopes of a much greater magnifying power for many of his discoveries. And it appears, he says, by many circumstances, that he had such microscopes. It appears from M. Leeuwenhoek's writings, that he was not unacquainted with the method of viewing opaque objects by a small concave reflecting mirror, which was afterwards improved by M. Lieberkhun. For, after describing his apparatus for viewing eels in glass tubes, he adds, that he had an instrument to which he screwed a microscope set in brass, upon which microscope he fastened a little dish of brass, probably to assist his eye to see objects better; for he says, he had polished the brass round his microscope as bright as he could, that the light, while he was viewing objects, might be reflected from it as much as possible. This microscope, with its dish, is constructed upon principles similar to those which are the foundation of our single microscope by reflection. See Microscope, § 2, 3.

206. In 1702, Mr Wilson made several ingenious improvements in the method of using single magnifiers, for the purpose of viewing transparent objects; and his microscope, which is also a necessary part of the solar microscope, is in very general use. See Microscope, § 7.

207. In 1710, Mr Adams gave to the Royal Society the following account of his method of making small globules for large magnifiers. He took a piece of fine window glass, and cut it with a diamond into as many lengths as he thought proper, not exceeding $\frac{1}{4}$ of an inch in breadth; then, holding one of them between the fore finger and thumb of each hand over a very fine flame, till the glass began to soften, he drew it out till it was as fine as a hair, and broke; then putting each of the ends into the purest part of the flame, he had two globules, which he could make larger or less at pleasure. If they were held long in the flame, they would have spots in them, so that he drew them out presently after they became round. The stem he broke off as near to the globule as he could, and lodging the remainder between the plates, in which holes were drilled exactly round, the microscope performed to admiration. Through these magnifiers the same thread of very fine muslin appeared 3 or 4 times bigger than it did in the largest of Mr Wilson's magnifiers.

208. The ingenious Mr Grey hit upon a very easy expedient to make very good temporary microscopes, at a very little expence. They consist of nothing but very small drops of water, taken up with a point of a pin, and put into a small hole made in a piece of metal. These globules of water do not indeed magnify so much as those which are made of glass of the same size, because the refractive power of water is not so great; but the same purpose will be answered nearly as well by making them somewhat smaller. Mr Grey, observing that small heterogeneous particles, inclosed in the glass of which microscopes are made, were much magnified when those glasses were looked through, thought of making his microscopes of water that contained living animalcula, to see how they would look in this new situation; and he found his scheme to answer beyond his utmost expectation, so that he could not even account for their being magnified so much as they were; for it was much more than they would have been magnified if they had been placed beyond the globule, in the proper place for viewing objects. But Montucla observes, that, when any object is inclosed within this small transparent globule, the binder part of it acts like a concave mirror, provided they be situated between that surface and the focus; and that they are thus magnified above $3\frac{1}{4}$ times more than they would have been in the usual way.

209. After the happy execution of the reflecting telescope, it was natural to expect that attempts would also be made to render a similar service to microscopes. Accordingly we find two plans of this kind. The first was that of Dr Robert Barker. His instrument differs in nothing from the reflecting telescope, excepting the distance of the two speculums, to adapt it to those pencils of rays which enter the microscope diverging; whereas they come to the telescope from very distant objects nearly parallel to each other. This microscope is not so easy to manage as the common sort. For vision by reflecting, as it is much more perfect, so it is far more difficult than that by refraction. Nor is this microscope so useful for any but very small or transparent objects. For the object, being between the speculum and image, would, if it were large and opaque, prevent a due reflection.

210. Dr Smith invented a double reflecting microscope, of which a theoretical and practical account is given in the remarks on the 2d volume of his System of Optics. As it is constructed on principles essentially different from all others, and, in the opinion of the ablest judges, is incomparably superior to them all, we insert the following practical description. *Pl.* CCLI, *fig.* 2. is a section of this microscope, where ABC and *abc* are two specula, the former concave, and the latter convex, inclosed within the tube DEFG. The speculum ABC, is perforated like the speculum of a Gregorian telescope; and the object to be magnified is so placed between the centre and principal focus of that speculum, that the rays flowing from it to ABC are reflected towards an image *pq*. But before they are united in that image they are received by the convex speculum *abc*, and thence reflected through the hole BC in the vertex of the concave to a second image *rs*, to be viewed through an eye-glass *l*. The object may either be situated between the two specula, or, which is perhaps better, between the principal focus and vertex *c* of the convex speculum *abc*, a small hole being made in its vertex for the incident rays to pass through. When the microscope is used, let the object be included between two little round plates of Muscovy glass, fixed in a hole of an oblong brass plate *mn*, intended to slide close to the back side of the convex speculum; which must therefore be ground

flat

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flat on that side, and so thin that the object may come precisely to its computed distance from the vertex of the speculum. The slider must be kept tight to the back of the metal by a gentle spring. The distance of the object being thus determined once for all, distinct vision to different eyes, and through different eye-glasses, must be procured by a gentle motion of the little tubes in which these glasses are fixed. These tubes must be made in the usual form of those that belong to Sir Isaac Newton's reflecting telescope (see TELESCOPE), having a small hole in the middle of each plate, at the ends of the tube, situated exactly in each focus of the glass: the use of these holes and plates is to limit the visible area, and hinder any straggling rays from entering the eye. To the tube of the eye-glass is fastened the arm *g*, on which the adjusting screw turns. A similar arm *s* is attached to the fixed tube X, in which the neck of the screw turns; and by turning the button *y*, the eye tube is moved farther from or nearer to the object, by which means different sorts of eyes obtain distinct vision. The rays which flow from the object directly through the hole in the concave speculum and through the eye-glass, by mixing with the reflected rays, would dilute the image on the retina, and therefore must be intercepted. The little hole in the convex speculum is ground conical as in the figure; and a conical solid P, of which the base is larger than the orifice in the back of the concave speculum, supported on the slender pillar PQ, is so placed as to intercept all the *direct* rays from the eye-glass. All the tubes are strongly blacked on their insides, and so is the conical solid, to hinder all reflection of rays from these objects upon the convex speculum. The little base, too, of the solid should be made concave, that whatever light it may still reflect, may be thrown back upon the object; and its back side being conical and blacked all over, will either absorb or laterally disperse any straggling rays which the concave speculum may scatter upon it, and so prevent their coming to the eye-glass. Notwithstanding the interposition of this conical solid, yet when the eye-glass is taken out, distant objects may be distinctly seen through the microscope, by rays reflected from the metals, and diverging upon the eye from an image behind the convex speculum. But this mixture of foreign rays with those of the object, which is common to all kinds of microscopes in viewing transparent objects, is usually prevented by placing before the object a thick double convex lens L, to collect the sky-light exactly upon the object. This lens should be just so broad as to subtend the opposite angle to that which the concave speculum subtends at the object. The annular frame of the lens must be very narrow, and connected to the microscope by two or three slender wires or blades, whose planes produced may pass through the object, and intercept from it as little sky-light as possible.

211. In 1738 or 1739, M. LIEBERKHUN made two capital improvements in microscopes, by the invention of the *solar microscope*, and the *microscope for opaque objects*. When he was in England in winter 1739, he showed an apparatus of his own making, for each of these purposes, to several gentlemen of the Royal Society, as well as to some opticians, particularly Mr Cuff in Fleet-street, who took great pains to improve them. (See MICROSCOPE, § 7 and 8.) The microscope for opaque objects remedies the inconvenience of having the dark side of an object next the eye. For by means of a concave speculum of silver, highly polished, in the centre of which a magnifying lens is placed, the object is so strongly illuminated, that it may be examined with all imaginable ease and pleasure. A convenient apparatus of this kind, with different specula and magnifiers of different powers, was brought to perfection by Mr Cuff. This improvement induced M. ÆPINUS to attend to the subject; and he produced a very valuable improvement in this instrument. For by throwing the light upon the fore side of any object by means of a mirror, before it is transmitted through the object-lens, all kinds of objects are equally well represented by it.

212. M. EULER proposed a scheme to introduce vision by reflected light into the magic lantern and solar microscope, by which many inconveniences to which those instruments are subject might be avoided. But more perfect instruments are described under the article MICROSCOPE. Several improvements were made in the apparatus to the solar microscope, by M. ZEISER, as well as by Messrs MARTIN, ADAMS, &c. See MICROSCOPE, § 4 and 5.

213. The smallest globules, and consequently the greatest magnifiers, for microscopes, that have yet been executed, were made by T. DI TORRE of Naples, who, in 1765, sent 4 of them to the Royal Society. The largest was only two Paris points in diameter, and it was said to magnify the diameter of an object 640 times. The 2d was the size of one Paris point, and the 3d was only half of a Paris point, or the 144th part of an inch, in diameter, and was said to magnify the diameter of an object 2560 times. One of these globules was wanting when they came into the hands of Mr BAKER, to whose examination they were referred by the Royal Society. This gentleman, so famous for his skill in microscopes, and his extraordinary expertness in managing them, was not able to make any use of these.

214. The construction of a telescope with six eye-glasses led M. Euler to a similar construction of microscopes, by introducing into them six lenses, one of which admits of so small an aperture, as to serve, instead of a diaphragm, to exclude all foreign light, though, as he says, it neither lessens the field of view, nor the brightness of objects.

215. The improvement of all dioptric instruments is greatly impeded by inequalities in the substance of the glass of which they are made: but though many attempts have been made to make glass without that imperfection, none of them have been hitherto quite effectual. M. A. D. MERKLEIN, having found some glass which had been melted when a building was on fire, and which proved to make excellent object-glasses for telescopes, concluded that its peculiar goodness arose from its not having been disturbed when it was in a fluid state; and therefore he proposed to take the metal out of the furnace in iron vessels, of the same form that was wanted for the glass; and after it had been perfectly fluid in those vessels, to let

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let it stand to cool, without any disturbance. But this is not always found to answer.

PART I.

THEORY OF OPTICS.

Divisions of the Science.

216. THIS part of the science comprehends all that hath been discovered concerning the various motions of the rays of light, either through different mediums, or when reflected from different substances in the same medium. It contains also the *rationale* of every thing which hath been discovered with regard to vision; the optical deceptions to which we are liable; and, in short, ought to give the reason of all the known optical phenomena.—The science is commonly divided into three parts, viz. *dioptrics*, which contain the laws of refraction, and the phenomena depending upon them; *catoptrics*, which contain the laws of reflection, and the phenomena which depend on them; and *chromatics*, which treat of the phenomena of colour. But this definition is of no use in a treatise of Optics, as most of the phenomena depend both on refraction and reflection, colour itself not excepted. For this reason, though we have given detached articles under the words Dioptrics, Catoptrics, and Chromatics, we have reserved to this place the explanation of the laws of reflection and refraction, by which all optical phenomena may be accounted for.

Sect. I. *Of the* Properties *of* Light *in general.*

217. Under the article Light we have given some account of the controversies concerning its nature. The opinions of philosophers may, in general, be arranged under these two: 1. That the phenomena of vision and illumination are produced by the undulations of an elastic fluid, much in the same manner as sound is produced by the undulations of air. This opinion was first offered to the public by Descartes, and afterwards by Mr Huygens, and has lately been revived by Mr Euler, who has endeavoured to explain the phenomena upon mechanical principles.—2d, That the phenomena of vision are produced by the motion and action of matter emitted from the shining body with immense velocity, moving uniformly in straight lines, and acted on by other bodies, so as to be reflected, refracted, or inflected, in various ways, by means of forces which act on it in the same manner as on other inert matter.

218. Sir Isaac Newton has shown, in the most incontrovertible manner, the total dissimilarity between the phenomena of vision and the legitimate consequences of the undulations of an elastic fluid. All Mr Euler's ingenious and laborious disquisitions have not removed Newton's objections in the smallest degree. Sir Isaac adopts the vulgar opinion, therefore, making light of the difficulties objected to it, because none of them are inconsistent with the established principles of mechanics, and are merely difficulties of conception to our limited faculties. We need not despair of being able to decide, by experiment, which of these opinions is nearest to the truth; because there are phenomena where the result should be sensibly different in the two hypotheses. Here we shall only give some account of the legitimate consequences of the vulgar opinion as modified by Sir Isaac Newton, viz. that light consists of small particles emitted with very great velocity, and attracted or repelled by other bodies at very small distances.

219. Every visible body emits or reflects inconceivably small particles of matter from each point of its surface, which issue from it continually (not unlike sparks from a coal) in straight lines, and in all directions. These particles entering the eye, and striking upon the retina (a nerve expanded on the back part of the eye to receive their impulses), excite in our minds the idea of light. And as they differ in substance, density, velocity, or magnitude, they produce in us the ideas of different colours; as will be explained in its proper place.

220. That the particles which constitute light are exceedingly small, appears from hence, viz. that if a hole be made through a piece of paper with a needle, rays of light from every object on the farther side of it are capable of passing through it at once without the least confusion; for any one of those objects may as clearly be seen through it, as if no rays passed through it from any of the rest. Further, if a candle is lighted, and there be no obstacle in the way to obstruct the progress of its rays, it will fill all the space within two miles of it every way with luminous particles, before it has lost the least sensible part of its substance thereby. That these particles proceed from every point of the surface of a visible body, and in all directions, is clear from hence, that wherever a spectator is placed with regard to the body, every point of that part of the surface which is turned towards him is visible to him. That they proceed from the body in right lines, we are assured, because just so many and no more will be intercepted in their passage to any place by an interposed object, as that object ought to intercept, supposing them to come in such lines.

221. The Velocity with which they proceed from the surface of the visible body is no less surprising than their minuteness: the method whereby philosophers estimate their swiftness, is by observations made on the eclipses of Jupiter's satellites; which eclipses to us appear about 7 minutes sooner than they ought to do by calculation, when the earth is placed between the sun and him, that is, when we are nearest to him; and as much later when the sun is between him and us, at which time we are farthest from him: from whence it is concluded, that they require about 7 minutes to pass over a space equal to the distance between the sun and us, which is about 95,000,000 of miles.

222. A stream of these particles issuing from the surface of a visible body in one and the same direction, is called a Ray of Light. As rays proceed from a visible body in all directions, they necessarily become thinner and thinner, continually spreading themselves as they pass along into a larger space, and that in proportion to the squares of their distances from the body; that is, at the distance of 2 spaces, they are 4 times thinner than they are at one; at the distance of 3 spaces, 9 times thinner, and so on: the reason of which is, because they spread themselves in a twofold manner

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manner, viz. upwards and downwards, as well as sidewise.

223. The particles of light are subject to the laws of attraction of cohesion, like other small bodies; for if a ray of light be made to pass by the edge of a knife, it will be diverted from its natural course, and be inflected towards the edge of the knife. The like inflection happens to a ray when it enters obliquely into a denser or rarer substance than that in which it was before, in which case it is said to be refracted; the laws of which refraction are the subject of the following section.

SECT. II. *Of* REFRACTION.

224. LIGHT, when proceeding from a luminous body, without being reflected from any opaque substance, or inflected by passing very near one, is invariably found to proceed in straight lines, without the least deviation. But if it happens to pass obliquely from one medium to another, it always leaves the direction it had before, and assumes a new one; and this change of course is called its *refraction*. After having taken this new direction, it then proceeds invariably in a straight line till it meets with a different medium, when it is again turned out of its course. It must be observed, however, that though we may thus cause the rays of light make any number of angles in their course, it is impossible for us to make them describe a curve, except in one single case, namely, where they pass through a medium, the density of which uniformly either increases or decreases. This is the case with the light of the celestial bodies, which passes downwards through our atmosphere, and likewise with that which is reflected upwards through it by terrestrial objects. In both these cases, it describes a curve of the hyperbolic kind; but at all other times it proceeds in straight lines, or in what may be taken for straight lines without any sensible error.

§ I. *Of the* CAUSE *of* REFRACTION, *and the* LAW *by* WHICH *it is* PERFORMED.

225. THE phenomena of refraction are explained by an attractive power in the medium through which light passes, in the following manner: All bodies being endowed with an attractive force, which is extended to some distance beyond their surfaces; when a ray of light passes out of a rarer into a denser medium (if this latter has a greater attractive force than the former, as is commonly the case), the ray, just before its entrance, will begin to be attracted towards the denser medium; and this attraction will continue to act upon it, till some time after it has entered the medium; and therefore, if a ray approaches a denser medium in a direction perpendicular to its surface, its velocity will be continually accelerated during its passage through the space in which that attraction exerts itself; and therefore, after it has passed that space, it will move on, till it arrives at the opposite side of the medium, with a greater degree of velocity than it had before it entered. So that in this case its velocity only will be altered. Whereas, if a ray enters a denser medium obliquely, it will not only have its velocity augmented thereby, but its direction will become less oblique to the surface. Just as when a stone is thrown downwards obliquely from a precipice, it falls to the surface of the ground in a direction nearer to a perpendicular one than that with which it was thrown from the hand. Hence a ray of light, in passing out of a rarer into a denser medium, is refracted towards the perpendicular; *i. e.* supposing a line drawn perpendicularly to the surface of the medium, through the point where the ray enters, and extended both ways, the ray, in passing through the surface, is refracted or bent towards the perpendicular line; or, which is the same thing, the line which it describes by its motion after it has passed through the surface, makes a less angle with the perpendicular than the line it described before. All which may be illustrated thus:

226. Suppose first, that the ray passes out of a vacuum into the denser medium ABCD (*fig. 3. Pl. 251.*) and that the attractive force of each particle in the medium is extended from its respective centre to a distance equal to that which is between the lines AB and EF, or AB and GH; and let KL be the path described by a ray of light in its progress towards the denser medium; this ray, when it arrives at L, will enter the attractive forces of those particles which lie in AB, the surface of the denser medium, and will therefore cease to proceed any longer in the right line KLM, but will be diverted from its course by being attracted towards the line AB, and will begin to describe the curve LN, passing through the surface AB in some new direction, as oQ; thereby making a less angle with a line, as PR, drawn perpendicularly through the point N, than it would have done had it proceeded in its first direction KLM.

227. Whereas we have supposed the attractive force of each particle to be extended through a space equal to the distance between AB and EF, it is evident that the ray, after it has entered the surface, will still be attracted downwards, till it has arrived at the line EF; for, till that time, there will not be so many particles above it which will attract it upwards, as below, that will attract it downwards. So that after it has entered the surface at N, in the direction oQ, it will not proceed in that direction, but will continue to describe a curve, as NS; after which it will proceed straight on towards the opposite side of the medium, being attracted equally every way; and therefore will at last proceed in the direction xST, still nearer the perpendicular PR than before. Now, if we suppose ABZY not to be a vacuum, but a rarer medium than the other, the case will still be the same; but the ray will not be so much refracted from its rectilineal course, because the attraction of the particles of the upper medium being in a contrary direction to that of the attraction of those in the lower one, the attraction of the denser medium will in some measure be destroyed by that of the rarer. On the contrary, when a ray passes out of a denser into a rarer medium, if its direction be perpendicular to the surface of the medium, it will only lose somewhat of its velocity, in passing through the spaces of attraction of that medium (that is, the space wherein it is attracted more one way than it is another.) If its direction be oblique, it will continually recede from the perpendicular during its passage, and by these

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means have its obliquity increased, just as a stone thrown up obliquely from the surface of the earth increases its obliquity all the time it rises. Thus, supposing the ray TS passing out of the denser medium ABCD into the rarer ABZY, when it arrives at S it will begin to be attracted downwards, and so will describe the curve SNL, and then proceed in the right line LK; making a larger angle with the perpendicular PR than the line TSx, in which it proceeded during its passage through the other medium.

228. The forces which produce this deviation of the rays of light from their original path, arise from the joint action of all the particles of the body which are sufficiently near the particle of light; that is, whose distance from it is not greater than the line AE or GA; and therefore the whole force which acts on a particle in its different situations between the planes GH and EF, follows a very different law from the force exerted by one particle of the medium. The space through which the attraction of cohesion of the particles of matter is extended is so very small, that, in considering the progress of a ray of light out of one medium into another, the curvature it describes in passing through the space of attraction is generally neglected; and its path is supposed to be bent, or, in the usual terms, the ray is supposed to be refracted only in the point where it enters the denser medium. Now the line which a ray describes before it enters a denser or a rarer medium, is called the *incident ray*; that which it describes after it has entered, is the *refracted ray*. The angle comprehended between the incident ray and the perpendicular, is the *angle of incidence*; and that between the refracted ray and the perpendicular, is the *angle of refraction*.

229. There is a certain and immutable law or rule by which refraction is always performed; and that is this: Whatever inclination a ray of light has to the surface of any medium before it enters it, the degree of refraction will always be such, that the proportion between the sine of the angle of its incidence, and that of the angle of its refraction, will always be the same in that medium. To illustrate this: Let us suppose ABCD (*fig.* 4. *Pl.* 251.) to represent a rarer, and ABEF a denser medium; let GH be a ray of light passing through the first and entering the second at H, and let HI be the refracted ray: then supposing the perpendicular PR drawn through the point H, on the centre H, and with any radius, describe the circle APBR; and from G and I, where the incident and refracted rays cut the circle, let fall the lines GK and IL perpendicularly upon the line PR; the former of these will be the sine of the angle of incidence, the latter of refraction. Now, if in this case the ray GH is so refracted at H that GK is double or triple, &c. of IL, then, whatever other inclination the ray GH might have had, the sine of its angle of incidence would have been double or triple, &c. to that of its angle of refraction. For instance, had the ray passed in the line MH before refraction, it would have passed in some line as HN afterwards, so situated that MO should have been double or triple, &c. of NQ.

230. When a ray passes out of a vacuum into air, the sine of the angle of incidence is found to be to that of refraction as 100036 to 100000. When it passes out of air into water, as about 4 to 3. When out of air into glass, as about 17 to 11. When out of air into a diamond, as about 5 to 2.

231. This relation of the sine of the angle of incidence to that of refraction, which is a proposition of the most extensive use in explaining the optical phenomena on physical or mechanical principles, may be demonstrated in the following easy and familiar manner:

232. Lemma I. The augmentations or diminutions of the squares of the velocities, produced by the uniform action of accelerating or retarding forces, are proportional to the forces, and to the spaces along which they act, jointly, or are proportional to the products of the forces multiplied by the spaces.

233. Let, two bodies be uniformly accelerated from a state of rest in the points A, *a*, along the spaces AB, *a b*, (*fig.* 5.) by the accelerating forces F *f*, and let AC, *a c*, be spaces described in equal times; it is evident, from what has been said under the articles Gravity and Acceleration, that because these spaces are described with motions uniformly accelerated, AC and *ac* are respectively the halves of the spaces which would be uniformly described during the same time with the velocities acquired at C and *c*, and are therefore measures of these velocities. And as these velocities are uniformly acquired in equal times, they are measures of the accelerating forces. Therefore $AC : ac = F : f$. Also, from the nature of uniformly accelerated motion, the spaces are proportional to the squares of the acquired velocities. Therefore, (using the symbols $\surd^2 C$, $\surd^2 c$, &c. to express the squares of the velocities at C *c*, &c.) we have

$$\surd^2 B : \surd^2 C = AB : AC$$
$$\surd^2 C : \surd^2 c = AC^2 : ac^2$$
$$\surd^2 c : \surd^2 b = ac : ab$$

Therefore, by equality of compound ratios,

$\surd^2 B : \surd^2 b = AB \times AC : ab \times ac = AB \times F : ab \times f$. And in like manner $\surd^2 D : \surd^2 d = AD \times F : ad \times f$; and $\surd^2 B - \surd^2 D : \surd^2 b - \surd^2 d = BD \times F : bd \times f$. Q. E. D.

234. *Corol.* If the forces are as the spaces inversely, the augmentations or diminutions of the squares of the velocities are equal.

235. *Remark.* If DB, *d b*, be taken extremely small, the products $BD \times F$ and $bd \times f$ may be called the momentary actions of the forces, or the momentary increments of the squares of the velocities. It is usually expressed, by the writers on the higher mechanics, by the symbol $f s$, or $f ds$, where f means the accelerating force, and s or ds means the indefinitely small space along which it is uniformly exerted. And the proportion is expressed by the fluxionary equation $f s = v\,v$, because $v\,v$ is half the increment of v^2, as is well known.

236. Lemma II. (being the 39th proposition of the first book of Newton's *Principia*.) If a particle of matter, moving with any velocity along the line AC) *Fig.* 6. *Pl.* 251. impelled by an accelerating or retarding force, acting in the same or in the opposite direction, and if the intensity of the force in the different points B, F, H, C, &c. be

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be as the ordinates BD, FG, &c. to the line DGE, the areas BFGD, BHKD, &c. will be as the changes made on the square of the velocity at B, when the particle arrives at the points F, H, &c. For let BC be divided into innumerable small portions, of which let FH be one, and let the force be supposed to act uniformly, or to be of invariable intensity during the motion along FH; draw GI perpendicular to HK; it is evident that the rectangle FHIG will be as the product of the accelerating force by the space along which it acts, and will therefore express the momentary increment of the square of the velocity. (*Lemma* 1.) The same may be said of every such rectangle. And if the number of the portions, such as FH, be increased, and their magnitude diminished without end, the rectangles will ultimately occupy the whole curvilineal area, and the force will be continually varying in its intensity. The curvilineal areas will therefore be as the finite changes made on the squares of the velocity, and the proportion is demonstrated.

237. *Corol.* The whole change made on the square of the velocity is equal to the square of that velocity which the accelerating force would communicate to the particle, by impelling it along BC from a state of rest in B. For the area BCED will still express the square of this velocity, and it equally expresses the change made on the square of *any* velocity wherewith the particle may pass through the point B, and is independent on the magnitude of that velocity.

238. *Remark.* The figure is adapted to the case where the forces all conspire with the initial motion of the particle, or all oppose it; and the area expresses an augmentation or a diminution of the square of the initial velocity. But the reasoning would have been the same, although, in some parts of the line BC, the forces had conspired with the initial motion, and in other parts had opposed it. In such a case, the ordinates which express the intensity of the forces must lie on different sides of the abscissa BC, and that part of the area which lies on one side must be considered as negative with respect to the other, and be subtracted from it. Thus, if the forces are represented by the ordinates of the dotted curve-line DH*e*, which crosses the abscissa in H, the figure will correspond to the motion of a particle, which, after moving uniformly along AB, is subjected to the action of a variable accelerating force during its motion along BH, and the square of its initial velocity is increased by the quantity BHD; after which it is retarded during its motion along HC, and the square of its velocity in H is diminished by a quantity HC*e*. Therefore the square of the initial velocity is changed by a quantity BHD—HC*e*, or HC*e*—BHD.

239. This proposition is perhaps the most important in the whole science of mechanics, being the foundation of every application of mechanical theory to the explanation of natural phenomena. No traces of it are to be found in the writings of philosophers before the publication of Newton's Principia, although it is assumed by John Bernoulli and other detractors from Newton's greatness, as an elementary truth, without any acknowledgment of their obligations to its author. It is usually expressed by the equation $fs = v\,v$ and $ffs = v^2$, i. e. the sum of the momentary actions is equal to the whole or finite increment of the square of the velocity.

240. PROPOSITION. When light passes obliquely into or out of a transparent substance, it is refracted so that the sine of the angle of incidence is to the sine of the angle of refraction in the constant ratio of the velocity of the refracted light to that of the incident light.

241. Let ST, KR (*fig.* 7.), represent two planes (parallel to, and equidistant from, the refracting surface XY) which bound the space in which the light, during its passage, is acted on by the refracting forces, as explained in § 225. The intensity of the refracting forces, being supposed equal at equal distances from the bounding planes, though any how different at different distances from them, may be represented by the ordinates T*a*, *nq*, *pr*, *c*R, &c. of the curve *abnpc*, of which the form must be determined from observation, or may remain for ever unknown. The phenomena of inflected light shew us that it is attracted by the refracting substance at some distances, and repelled at others.

242. Let the light, moving uniformly in the direction AB, enter the refracting stratum at B. It will not proceed in that direction, but its path will be incurvated upwards, while acted on by a repulsive force, and downwards, while impelled by an attractive force. It will describe some curvilineal path B*d o* CDE, which AB touches in B, and will finally emerge from the refracting stratum at E, and move uniformly in a straight line EF, which touches the curve in E. If, through *b*, the intersection of the curve of forces with its abscissa, we draw *b o*, cutting the path of the light in *o*, it is evident that this path will be concave upwards between B and *o*, and concave downwards between *o* and E. Also, if the initial velocity of the light has been sufficiently small, its path may be so much bent upwards, that in some point *d* its direction may be parallel to the bounding planes. In this case it is evident, that being under the influence of a repulsive force, it will be more bent upwards, and it will describe *df*, equal and similar to *d*B, and emerge in an angle *g f*S equal to ABG. In this case it is reflected, making the angle of reflection equal to that of incidence. By which it appears how reflection, refraction, and inflection, are produced by the same forces, and performed by the same laws.

243. But let the velocity be supposed sufficiently great to enable the light to penetrate through the refracting stratum, and emerge from it in the direction EF; let AB and EF be supposed to be described in equal times: They will be proportional to the initial and final velocities of the light. Now, because the refracting forces *must* act in a direction perpendicular to the refracting surface (since they arise from the joint action of all the particles of a homogeneous substance which are within the sphere of mutual action), they cannot affect the motion of the light estimated in the direction of the refracting surface. If, therefore, AG be drawn perpendicular to ST, and FK to KR, the lines GB, EK, must be equal, because they are the motions AB, EF, estimated in the direction of the planes. Draw now EL parallel to

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AB. It is also equal to it. Therefore EL, EF, are as the initial and final velocities of the light. But EF is to EL as the sine of the angle ELK to the sine of the angle EFK; that is, as the sine of the angle ABH to the sine of the angle FEI; that is, as the sine of the angle of incidence to the sine of the angle of refraction.

244. By the same reasoning it will appear that light, moving in the direction and with the velocity FE, will describe the path EDB, and will emerge in the direction and with the velocity BA. Let another ray enter the refracting stratum perpendicularly at B, and emerge at Q. Take two points N, P, in the line BQ, extremely near to each other, so that the refracting forces may be supposed to act uniformly along the space NP; draw NC, PD, parallel to ST, CM perpendicular to DP, and MO perpendicular to CD, which may be taken for a straight line; then, because the forces at C and N are equal, by supposition they may be represented by the equal lines CM and NP. The force NP is wholly employed in accelerating the light along NP; but the force CM being transverse to the motion BD, is but partly so employed, and may be conceived as arising from the joint action of the forces CO, OM, of which CO only is employed in accelerating the motion of the light, while OM is employed in incurvating its path. Now, it is evident, from the similarity of the triangles DCM, MCO, that DC, CM=CM:CO, and that DC×CO=CM×CM=NP×NP. But DC×CO and NP×NP are as the products of the spaces by the accelerating forces, and express the momentary increments of the squares of the velocities at C and N. (*Lemma* 1.) These increments, therefore, are equal. And as this must be said of every portion of the paths BCE and BNQ, it follows that the whole increment of the square of the initial velocity produced in the motion along BCE, is equal to the increment produced in the motion along BNQ. And, because the initial velocities were equal in both paths, their squares were equal. Therefore the squares of the final velocities are also equal in both paths, and the final velocities themselves are equal. The initial and final velocities are therefore in a constant ratio, whatever are the directions; and the ratio of the sines of the angles of incidence and refraction being the ratio of the velocities of the refracted and incident light, by the former case of *Prop.* 1. is also constant.

245. *Remark.* The augmentation of the square of the initial velocity is equal to the square of the velocity, which a particle of light would have acquired, if impelled from a state of rest at B along the line BQ (*Corol.* of *Lemma* 2.), and is therefore independent on the initial velocity. As this augmentation is expressed by the curvilineal area *a*TbnpcR, it depends both on the intensity of the refracting forces, expressed by the ordinates, and on the space through which they act, viz. TR. These circumstances arise from the nature of the transparent substance, and are characteristic of that substance. Therefore, to abbreviate language, we shall call this the *specific velocity*. This specific velocity is easily determined for any substance in which the refraction is observed, by drawing L*i* perpendicular to EL, meeting in *i*, the circle described with the radius EF. For E*i* being equal to EF, will represent the velocity of the refracted light, and EL represent the velocity of the incident light, and Ei^2=EL²×Li^2, and therefore Li^2 is the augmentation of the square of the initial velocity, and L*i* is the specific velocity.

246. It is now proper to deduce some corollaries from these propositions, tending to explain the chief phenomena of refraction.

247. I. When light is refracted towards the perpendicular to the refracting surface, it is accelerated; and it is retarded when it is refracted from the perpendicular. In the first case, therefore, it must be considered as having been acted on by forces conspiring (in part at least) with its motion, and *vice versa*. Therefore, because we see that it is always refracted towards the perpendicular, when passing from a void into any transparent substance, we conclude that it is, on the whole, attracted by that substance. We draw the same conclusion from observing, that it is refracted from the perpendicular in its passage out of any transparent substance whatever into a void. It has been attracted backwards by that substance. This acceleration of light in refraction is contrary to the opinion of those who maintain, that illumination is produced by the undulation of an elastic medium. EULER attempts to prove, by mechanical laws, that the velocities of the incident and refracted light are proportional to the sines of incidence and refraction, while our principles make them in this ratio inversely. BOSCOVICH proposed a fine experiment for deciding this question. The aberration of the fixed stars arises from the combination of the motion of light with the motion of the telescope by which it is observed; therefore it should be greater or less when observed by a telescope filled with water, according as light moves slower or swifter through water than through air. The experiment has not yet been made in a convincing manner; because no fluid has been found of sufficient transparency to admit of the necessary magnifying power. It is an experiment of the greatest importance to optical science.

248. II. If the light be moving within the transparent substance, and if its velocity (estimated in a direction perpendicular to the surface) do not exceed the specific velocity of that substance, it will not emerge from it, but will be reflected backwards in an angle equal to that of its incidence. For it must be observed, that in the figure of last proposition, the excess of the square of EF above the square of EL is the same with the excess of the square of KF above the square of KL. Therefore the square of the specific velocity is equal to the augmentation or diminution of the square of the perpendicular velocity. If therefore the initial perpendicular velocity FK (*Fig.* 8. *Pl.* CCLI.) be precisely equal to the specific velocity, the light will just reach the farther side of the attracting stratum, as at B, where its perpendicular velocity will be completely extinguished, and its motion will be in the direction BT. But it is here under the influence of forces tending towards the plane KR, and its motion will therefore be still incurvated towards it; and it will describe a curve BD equal and similar to EB, and finally emerge back from the refracting stratum into the transparent substance

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ſubſtance in an angle RDA equal to KEF. If the direction of the light be ſtill more oblique, ſo that its perpendicular velocity is leſs than the ſpecific velocity, it will not reach the plane ST, but be reflected as ſoon as it has penetrated ſo far that the ſpecific velocity of the part penetrated (eſtimated by the compounding part of the area of forces), is equal to its perpendicular velocity. Thus the ray *f*E will deſcribe the path E*d*D*a* penetrating to *bd*, ſo that the correſponding area of forces *a b c e* is equal to the ſquare of *f f*, its perpendicular velocity.

249. The extreme brilliancy of DEW DROPS and of JEWELS had often excited the attention of philoſophers, and it always appeared a difficulty how light was reflected at all from the poſterior ſurface of tranſparent bodies. It afforded Sir Iſaac Newton his ſtrongeſt argument againſt the uſual theory of reflection, viz. that it was produced by impact on ſolid elaſtic matter. He was the firſt who took notice of the total reflection in great obliquities; and very properly aſked how it can be ſaid that there is any impact in this caſe, or that the reflecting impact ſhould ceaſe at a particular obliquity?

250. It is a very curious circumſtance, that a body which is perfectly tranſparent ſhould ceaſe to be ſo at a certain OBLIQUITY; that a great obliquity ſhould not hinder light from paſſing from a void into a piece of glaſs; but that the ſame obliquity ſhould prevent it from paſſing from the glaſs into a void. The fineſt experiment for illuſtrating the fact is, to take two pieces of mirror glaſs, not ſilvered, and put them together with a piece of paper between them, forming a narrow margin all round to keep them apart. Plunge this apparatus into water. When held nearly parallel to the ſurface of the water, every thing at the bottom of the veſſel will be ſeen clearly through the glaſſes; but when turned ſo as to be inclined about 50°, they will intercept the light as much as if they were plates of iron. It will be proper to ſoak the paper in varniſh, to prevent water from getting between the glaſſes.

251. What is called the *brilliant cut* in DIAMONDS, is ſuch a diſpoſition of the poſterior facets of the diamond, that the light is made to fall upon them ſo obliquely, that none of it can go through, but all is reflected. To produce this effect in the greateſt poſſible degree, is a matter of calculation, and merits the attention of the lapidary. When diamonds are too thin to admit of this form, they are cut in what is called the *roſe* form. This has a plain back, and the facets are all on the front, and ſo diſpoſed as to refract the rays into ſufficient obliquities, to be ſtrongly reflected from the poſterior plane. Doublets are made by cutting one thin diamond roſe-faſhion, and another ſimilar one is put behind it, with their plane ſurfaces joined. Or, more frequently, the outſide diamond has the anterior facets of the brilliant, and the inner has the form of the inner part of a brilliant. If they be joined with very pure and ſtrongly refracting varniſh, little light is reflected from the ſeparating plane, and their brilliancy is very conſiderable, though inferior to that of a true and deep brilliant. If no varniſh be uſed, much of the light is reflected from the flat ſide, and the effect of the poſterior facets is much diminiſhed. But doublets might be conſtructed, by making the touching ſurfaces of a ſpherical form (of which the curvature ſhould have a due proportion to the ſize of the ſtone), that would produce an effect nearly equal to that of the moſt perfect brilliant.

252. III. Since the change made on the ſquare of the velocity of the incident light is a conſtant quantity, it follows, that the refraction will diminiſh as the velocity of the incident light increaſes. For if L*i* in *fig.* 7. be a conſtant quantity, and EL be increaſed, it is evident that the ratio of E*i* or its equal EF, to EL will be diminiſhed, and the angle LEF, which conſtitutes the refraction, will be diminiſhed. The phyſical cauſe of this is eaſily ſeen: When the velocity of the incident light is increaſed, it employs leſs time in paſſing through the refracting ſtratum or ſpace between the planes ST and KR, and is therefore leſs influenced by the refracting forces. A ſimilar effect would follow if the tranſparent body were moving with great velocity towards the luminous body.

253. The refraction of a ſtar which is in our meridian at ſix o'clock P. M. ſhould be greater than that of a ſtar which comes on the meridian at ſix A. M.; becauſe we are moving away from the firſt, and approaching to the laſt. But the difference is but $\frac{1}{1000}$ of the whole, and cannot be obſerved with ſufficient accuracy in any way yet practiſed. A form of obſervation has been propoſed by Dr BLAIR, profeſſor of aſtronomy in the univerſity of Edinburgh, which promiſes a very ſenſible difference of refraction. It is alſo to be expected, that a difference will be obſerved in the refraction of the light from the E. and W. ends of Saturn's ring. Its diameter is about 26 times that of the earth, and it revolves in 10h. 32′; ſo that the velocity of its edge is about $\frac{1}{10000}$ of the velocity of the ſun's light. If therefore the light be reflected from it according to the laws of perfect elaſticity, or in the manner here explained, that which comes to us from the weſtern extremity will move more ſlowly than that which comes from the eaſtern extremity in the proportion of 2500 to 2501. And if Saturn can be ſeen diſtinctly after a refraction of 30° through a priſm, the diameter of the ring will be increaſed one half in one poſition of the teleſcope, and will be as much diminiſhed by turning the teleſcope half round its axis; and an intermediate poſition will exhibit the ring of a diſtorted ſhape. This experiment is moſt intereſting to optical ſcience, as its reſult will be a ſevere touchſtone of the theories which have been attempted for explaining the phenomena on mechanical principles.

254. If the *tail of a comet* be impelled by the rays of the ſun, as is with great probability ſuppoſed by EULER and others, the light by which its extreme parts are ſeen by us muſt have its velocity greatly diminiſhed, being reflected by particles which are moving away from the ſun with immenſe rapidity. This may perhaps be diſcovered by its greater aberration and refrangibility.

255. As common DAY-LIGHT is nothing but the

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the sun's light reflected from terrestrial bodies, it is reasonable to expect that it will suffer the same refraction. But nothing but observation could assure us that this would be the case with the light of the stars; and it is rather surprising that the velocity of their light is the *same* with that of the sun's light. It is a circumstance of connection between the solar system and the rest of the universe. It was as little to be looked for on the light of terrestrial luminaries. If light be conceived as small particles of matter emitted from bodies by the action of accelerating forces of any kind, the vast diversity which we observe in the constitution of sublunary bodies should make us expect differences in this particular. Yet it is found, that the light of a *candle*, of a *glow-worm*, &c. suffers the same refraction, and consists of the same colours.

256. IV. When two transparent bodies are contiguous, the light in its passage out of the one into the other will be refracted towards or from the perpendicular, according as the refracting forces of the second are greater or less than those of the first, or rather according as the area expressing the square of the specific velocity is greater or less. And as the difference of these areas is a determined quantity, the difference between the velocity in the medium of incidence and the velocity in the medium of refraction, will also be a determined quantity. Therefore the sine of the angle of incidence will be in a constant ratio to the sine of the angle of refraction; and this ratio will be compounded of the ratio of the sine of incidence in the first medium to the sine of refraction in a void; and the ratio of the sine of incidence in a void to the sine of refraction in the second medium. If therefore a ray of light, moving through a void in any direction, shall pass through any number of media bounded by parallel planes, its direction in the last medium will be the same as if it had come into it from a void.

257. V. It also follows from these propositions, that if the obliquity of incidence on the posterior surface of a transparent body be such, that the light should be reflected back again, the placing a mass of the same or of another medium in contact with this surface, will cause it to be transmitted, and this the more completely, as the added medium is more dense or more refractive; and the reflection from the separating surface will be the more vivid, in proportion as the posterior substance is less dense, or of a smaller refractive power. It is not even necessary that the other body be in contact; it is enough if it be so near that those parts of the refracting strata which are beyond the bodies interfere with or coincide with each other. All these consequences are agreeable to experience. The brilliant reflection from a *dew-drop* ceases when it touches the leaf on which it rests: The brilliancy of a diamond is greatly damaged by moisture getting behind it: The opacity of the combined mirror plates, mentioned in the II. corollary, is removed by letting water get between them: A piece of GLASS is distinctly or clearly seen in air, more faintly when immersed in water, still more faintly amidst oil of olives, and it is hardly perceived in spirits of turpentine. These phenomena are incompatible with the notion that reflection is occasioned by impact on solid matter, whether of the transparent body, or of any æther or other fancied fluid behind it; and their perfect coincidence with the legitimate consequences of the assumed principles, is a strong argument in favour of the truth of those principles.

258. A fact, taken notice of by Mr BEGUELIN, has been objected as a great difficulty in the Newtonian theory of refraction. To get the greatest possible refraction, and the simplest measure of the refracting power at the anterior surface of any transparent substance, Sir Isaac Newton enjoins us to employ a ray of light falling on the surface *quam obliquissime*. But Mr Beguelin found, that when the obliquity of incidence in glass was about 89° 30′, no light was refracted, but it was wholly reflected: He also observed, that when he gradually increased the obliquity of incidence on the posterior surface of the glass, the light which emerged last of all did not skim along the surface, making an angle of 90° with the perpendicular, as it should do by the Newtonian theory, but made an angle of more than ten minutes with the posterior surface. Also, when he began with very great obliquities, so that all the light was reflected back into the glass, and gradually diminished the obliquity of incidence, the first ray of light which emerged did not skim along the surface, but was raised about 10 or 15 minutes.

259. But all these phenomena are necessary consequences of our principles, combined with what observation teaches us concerning the forces which bodies exert on the rays of light. It is evident, from the experiments of GRIMALDI and NEWTON, that light is both *attracted* and *repelled* by solid bodies. Newton's analysis of these experiments discovered several alternations of actual inflection and deflection; and he gives us the precise distance from the body when some of these attractions end, and repulsion commences; and the most remote action to be observed in his experiments is repulsion. Suppose that the forces are represented by the ordinates of a curve $u\ b\ n\ c\ p$ (see *fig. 7. pl. 251.*) which crosses the abscissa in b: Draw $b\ o$ parallel to the refracting surface. When the obliquity of incidence of the ray AB has become so great, that its path in the glass, or in the refracting stratum, does not cut, but only touches the line $o\ b$, it can penetrate no further, but is totally reflected: and this must happen in all greater obliquities. On the other hand, when the ray LE, moving within the glass, has but a very small perpendicular velocity, it will penetrate the refracting stratum no further than till this perpendicular velocity is extinguished, and its path becomes parallel to the surface, and it will be reflected back. As the perpendicular velocity increases by diminishing the obliquity of incidence, it will penetrate farther; and the last reflection will happen when it penetrates so far that its path touches the line $o\ b$. Now diminish the obliquity by a single second; the light will get over the line $o\ b$, will describe an arch $o\ dB$ concave upwards, and will emerge in a direction BA, which does not skim the surface, but is sensibly raised above it. And thus the facts observed by M. Beguelin,

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guella, inſtead of being an objection againſt this theory, afford an argument in its favour.

260. VI. Thoſe philoſophers who maintain the theory of *undulation*, are under the neceſſity of connecting the diſperſive powers of bodies with their mean refractive powers. Mr EULER has attempted to deduce a neceſſary difference in the velocity of the rays of different colours from the different frequency of the undulations, which he aſſigns as the cauſe of their different colorific powers. His reaſoning on this ſubject is of the moſt delicate nature; but unintelligible to ſuch as are not completely maſters of the infinitefimal calculus of partial differences, and unſatisfactory to ſuch as are able to go through its intricacies. It is contradicted by fact. Confident, however, of his analyſis, he gave a deaf ear to all that was told him of Mr DOLLOND's improvements on teleſcopes, and aſſerted, that they *could not be* ſuch as were related; for an increaſe of mean refraction muſt always be accompanied with a *determined* increaſe of diſperſion. Newton had ſaid the ſame thing, being miſled by a limited view of his own principles; but the diſperſion aſſigned by him was different from that aſſigned by Euler. The diſpute between Euler and Dollond was confined to the deciſion of this queſtion only; and when ſome glaſſes made by a German chemiſt at St Peterſburgh convinced Euler that his determination was erroneous, he had not the candour to give up the principle which had forced him to this determination of the diſperſion, but immediately introduced a new theory of the achromatic teleſcopes of Dollond: a theory which took the artiſts out of the tract marked out by mathematicians, and in which they had made conſiderable advances, and led them into another path, propoſing *maxims* of conſtruction hitherto untried, and inconſiſtent with real improvements which they had already made. The leading principle in this theory is to arrange the different ultimate images of a point, which ariſe either from the errors of a ſpherical figure or different refrangibility, in a ſtraight line paſſing through the centre of the eye. The theory itſelf is ſpecious, but falſe; and indeed, by admitting any diſperſive power, whatever may be the mean refraction, all the phyſical doctrines in his *Nova Theoria Lucis et Colorum* are overlooked, and therefore never once mentioned. although the effects of Mr Zeiher's glaſs are taken notice of as inconſiſtent with that mechanical propoſition of Newton's which occaſioned the whole diſpute between Euler and Dollond.

261. The late diſcoveries in chemiſtry afford very diſtinct proofs, that light is not exempted from the laws of chemical action, and that it is ſuſceptible of chemical combination. The changes produced by the ſun's light on vegetable colours ſhow the neceſſity of illumination to produce the green fecula; and the aromatic oils of plants, the irritability of their leaves by the action of light, the curious effects of it on the mineral acids, on manganeſe, and the calces of biſmuth and lead, and the imbibition and ſubſequent emiſſion of it by phoſphoreſcent bodies, are ſtrong proofs of its chemical affinities, quite inexplicable on the theory of undulations. All theſe conſiderations, had they been known to Sir Iſaac Newton, would have made him expect differences quite anomalous in the diſperſive powers of different tranſparent bodies; at the ſame time that they would have afforded to his ſagacious mind the ſtrongeſt argument for the actual emiſſion of light from the luminous body.

262. Having thus eſtabliſhed the obſerved law of refraction on mechanical principles, ſhowing it to be a neceſſary conſequence of the known action of bodies on light, we proceed to trace its mathematical conſequences through the various caſes in which it may be exhibited to our obſervation. Theſe conſtitute that part of the mathematical branch of optical ſcience which is called DIOPTRICS.

263. We are quite unacquainted with the law of action of bodies on light, that is, with the variation of the intenſity of the attractions and repulſions exerted at different diſtances. All that we can ſay is, that from the experiments and obſervations of Grimaldi, Newton, and others, light is deflected towards a body, or is attracted by it, at ſome diſtances, and repelled at others, and this with a variable intenſity. The action may be extremely different, both in extent and force, in different bodies, and change by a very different law with the ſame change of diſtance. But, amidſt all this variety, there is a certain ſimilarity ariſing from the joint action of many particles, which ſhould be noticed, becauſe it tends both to explain the ſimilarity obſerved in the refractions of light, and alſo its connection with the phenomena of reflection.

264. The law of variation in the joint action of many particles adjoining to the ſurface of a refracting medium, is extremely different from that of a ſingle particle; but when this laſt is known, the other may be found out. We ſhall illuſtrate this by a very ſimple caſe. Let DE (*fig* 9. *pl.* CCLI.) be the ſurface of a medium, and ſuppoſe that the action of a particle of the medium on a particle of light extends to the diſtance EA, and that it is proportional to the ordinates ED, F*f*, G*g*, H*b*, &c. of the line A*b* C*g f* D; that is, that the action of the particle E of the medium on a particle of light in F, is to its action on a particle in H as F*f* to H*b*, and that it is attracted at F, but repelled at H, as expreſſed by the ſituation of the ordinates with reſpect to the abſciſſa. In the line AE produced to B, make EB, Eχ, Eκ, Eγ, Eφ, &c. reſpectively equal to EA, EH, EC, EG, EF, &c. It is evident that a particle of the medium at B will exert no action on the particle of light in E, and that the particles of the medium in $\kappa\gamma\varphi$ E, will exert on it actions proportional to H*b*, G*g*, F*f*, ED. Therefore, ſuppoſing the matter of the medium continuous, the whole action exerted by the row of particles EB will be repreſented by the area A*b*CDE; and the action of the particles between B and φ will be repreſented by the area A*b*C*f*F, and that of the particles between E and φ by the area F*f*DE. Now let the particle of light be in F, and take Fo=AE. It is no leſs evident that the particle of light in F will be acted on by the particles in Eo alone, and that it will be acted on in the ſame manner as a particle in E is acted on by the particles in φB. Therefore the action of the whole row of particles EB on a particle

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ticle in F will be represented by the area $AhCfF$. And thus the action on a particle of light in any point of AE will be represented by the area which lies beyond it.

268. But let us suppose the particles of light to be within the medium, as at ρ, and make $\rho d = AE$. It is again evident, that it is acted on by the particles of the medium between ρ and d with a force represented by the area $A\rho hCDE$, and in the opposite direction by the particles in Eρ with a force represented by the area $E\rho fDE$. This balances an equal quantity of action, and there remains an action expressed by the area $A\rho CfF$. Therefore, if an equal and similar line to $A\rho CDE$ be described on the abscissa EB, the action of the medium on a particle of light in ρ will be represented by the area ρfkB, lying beyond it. If we now draw a line AKLMRNPB, whose ordinates CK, FQ, ρR, &c. are, as the areas of the other curve, estimated from A and B; these ordinates will represent the whole forces which are exerted by the particles in EB, on a particle of light moving from A to B. This curve will cut the axis in points L, N, so, that the ordinates drawn through them intercept areas of the first curve, which are equal on each side of the axis; and in these points the particle of light sustains no action from the medium. These points are very different from the similar points of the curve expressing the action of a single particle. These last are in the very places where the light sustains the greatest repulsive action of the whole row of particles. In the same manner may a curve be constructed, whose ordinates express the united action of the whole medium. From these observations we learn, in general, that a particle of light within the space of action is acted on with equal forces, and in the same direction, when at equal distances on each side of the surface of the medium.

§ II. *Of the* FOCAL DISTANCE *of* RAYS REFRACTED, *by passing out of one* MEDIUM *into another of* DIFFERENT DENSITY, *and through a* PLANE SURFACE.

266. LEMMA. The indefinitely small variation of the angle of incidence is to the simultaneous variation of the angle of refraction as the tangent of incidence is to the tangent of refraction; or, the cotemporaneous variations of the angles of incidence and refraction are proportional to the tangents of these angles. Let RVF, rVf (*pl.* CCLI. *fig.* 10.) be the progress of the rays refracted at V (the angle rXR being considered as in its nascent or evanescent state), and VC perpendicular to the refracting surface VA. From C draw CD, CB, perpendicular to the incident and refracted rays RV, VF, cutting rV, Vf in δ and β, and let $C\delta$, $C\beta$ be perpendicular to rV, Vf. Because the lines of incidence and refraction are in a constant ratio, their simultaneous variations are in the same constant ratio. Now the angle RVr is to the angle EVf in the ratio of $\frac{B\beta}{BV}$ to $\frac{D\delta}{DV}$; that is, of $\frac{BC}{BV}$ to $\frac{DC}{DV}$; that is, of $\frac{\text{fin. incid.}}{\text{cof. incid.}}$ to $\frac{\text{fin. refr.}}{\text{cof. refr.}}$; that is, *of tan. incid.* to *tan refr.*

269. *Corollary.* The difference of these variations is to the greatest or least of them as the difference of the tangents to the greatest or least tangent.

268. PROBLEM. Let two rays RV, RP diverge from, or converge to, a point R (*Plate* CCLII. *figs.* 1, 2, 3, 4.) and pass through the plane surface PV, separating two refracting mediums AB, of which let B be the most refracting, and let RV be perpendicular to the surface. It is required to determine the point of dispersion or convergence F, of the refracted rays VD, PE. Make VR to VG as the sine of refraction to the sine of incidence, and draw GIK parallel to the surface, cutting the incident ray in I. About the centre P, with the radius PI, describe an arch of a circle IF, cutting VR in F; draw PE tending from or towards F. We say PE is the refracted ray, and F the point of dispersion or convergence of the rays RV, RP, or the conjugate focus to R. For since GI and PV are parallel, and PF equal to PI, we have PF : PR = PI : PR, = VG : VR, = fin. incid. : fin. refr. But PF : PR = fin. PRV : fin. PFV, and RRV is equal to the angle of incidence at P; therefore PFV is the corresponding angle of refraction, FPE is the refracted ray, and F the conjugate focus to R.

269. *Coral.* 1. If diverging or converging rays fall on the surface of a more refracting medium, they will diverge or converge less after refraction, F being farther from the surface than R. The contrary must happen when the diverging or converging rays fall on the surface of a less refracting medium; because, in this case, F is nearer to the surface than R.

270. *Corol.* 2. Let Rρ be another ray, more oblique than RP, the refracting point ρ being farther from V, and let $f\rho e$ be the refracted ray, determined by the same construction. Because the arches FI, fi, are perpendicular to their radii, it is evident that they will converge to some point within the angle RIK, and therefore will not cross each other between F and I: therefore Rf will be greater than RF, as RF is greater than RG, for similar reasons. Hence it follows, that all the rays which tended from or towards R, and were incident on the whole of VPρ, will not diverge from or converge to F, but will be diffused over the line GfF. This diffusion is called *aberration from the focus*, and is so much greater as the rays are more oblique. No rays flowing from or towards R will have point of concourse with RV nearer to R than F is; but if the obliquity be inconsiderable, so that the ratio of RP to FP does not differ sensibly from that of RV to FV, the point of concourse will not be sensibly removed from G. G is therefore usually called the *conjugate focus* to R. It is the conjugate focus of an indefinitely slender pencil of rays falling perpendicularly on the surface. The conjugate focus of an oblique pencil, or even of two oblique rays, whose dispersion on the surface is considerable, is of more difficult investigation. See *Gravesande's Natural Philosophy* for a very neat and elementary determination.

271. As optical ABERRATION is the chief cause of the imperfection of optical instruments, and as the only method of removing this imperfection is to diminish this aberration, or correct it by a subsequent

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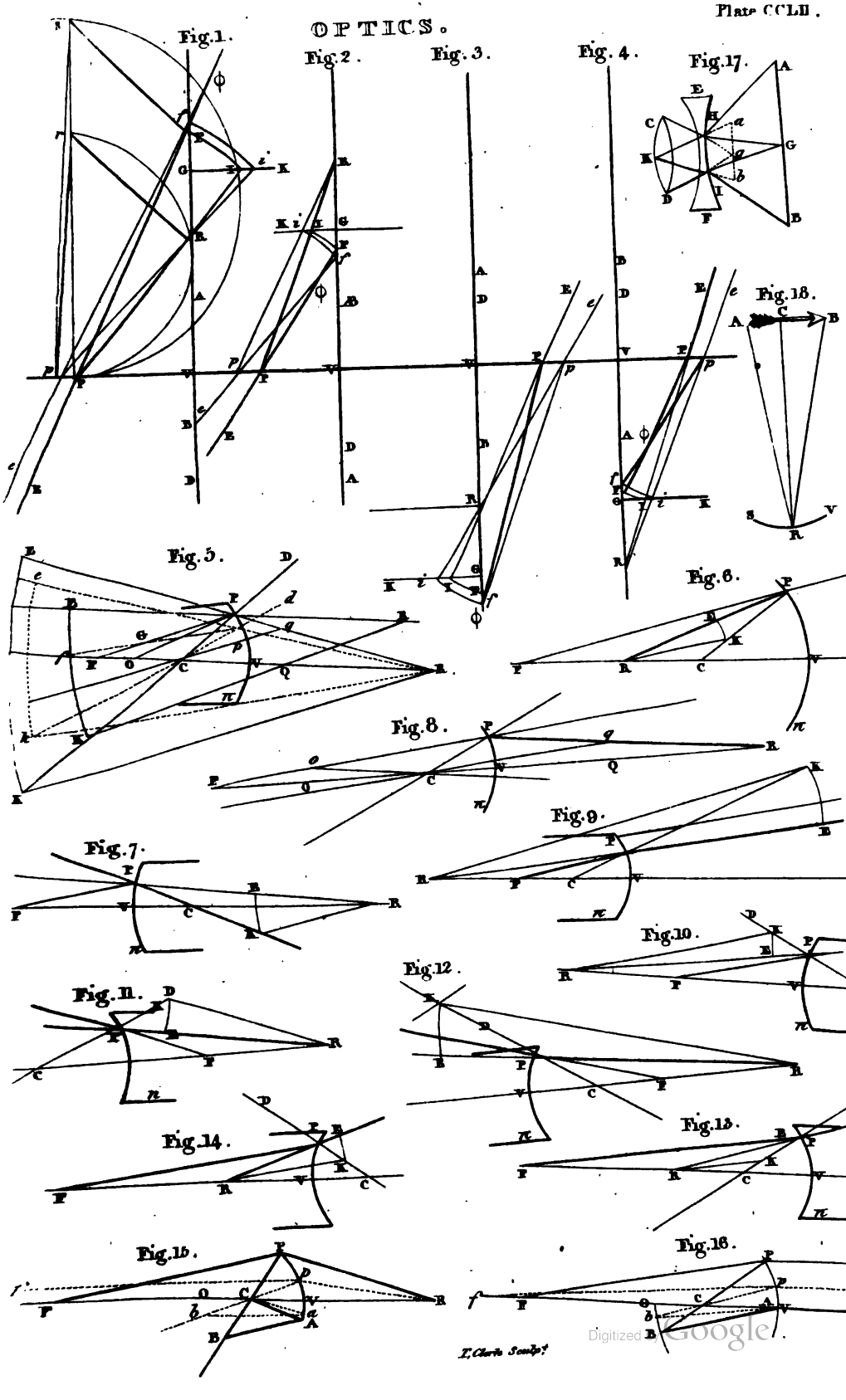
OPTICS.



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fequent aberration in the oppofite direction, we fubjoin a fundamental and very fimple propofition, which will apply to all important cafes. This is the determination of the focus of an infinitely flender pencil of oblique rays RP, Rp. "Retaining the former conftruction for the ray PF, (*fig.* 1.) fuppofe the other ray Rp infinitely near to RP. Draw PS perpendicular to PV, and Rr perpendicular to RP, and make Pr : PS=VR : VF. On Pr defcribe the femicircle rRP, and on PS the femicircle SsP, cutting the refracted ray PF in φ, draw pr, pS, $p\varphi$." It follows from the lemma that if φ be the focus of refracted rays, the variation Pφp of the angle of refraction is to the correfponding variation PRp of the angle of incidence as the tangent of the angle of refraction VFP to the tangent of the angle of incidence VRP. Now Pp may be confidered as coinciding with the arch of the femicircles. Therefore the angles PRp, Prp are equal, as alfo the angles Pφp, PSp. But PSp is to Prp as Pr to PS; that is, as VR to VF; that is, as the cotangent of the angle of incidence to the cotangent of the angle of refraction; that is, as the tangent of the angle of refraction to the tangent of the angle of incidence. Therefore the point φ is the focus.

§ III. *Of* REFRACTION *by* SPHERICAL SURFACES.

272. GENERAL PROBLEM. To find the focus of refracted rays, the focus of incident rays being given? Let PVπ (*pl.* CCLII, from *fig.* 5. to 14.) be a fpherical furface whofe centre is C, and let the incident light diverge from or converge to R.

273. *Solution.* Draw the ray RC through the centre, cutting the furface in the point V, which we denominate the *vertex*, while RC is called the *axis*. This ray paffes on without refraction, becaufe it coincides with the perpendicular to the furface. Let RP be another incident ray which is refracted at P, draw the radius PC. In RP make RE to RP as the fine of incidence m to the fine of refraction n; and about the centre R, with the diftance RE, defcribe the circle EK, cutting PC in K: draw RK and PF parallel to it, cutting the axis in F. PF is the refracted ray, and F is the focus; for the triangles PCF, KCR are fimilar, and the angles at P and K are equal. Alfo RK is equal to RE, and RPD is the angle of incidence. Now $m : n$=RK : RP,=fin. DPR : fin. RKP,=fin. DPR : fin. CPF. Therefore CPF is the angle of refraction correfponding to the angle of incidence RPD, and PF is the refracted ray, and F the focus. Q. E. D.

274. *Cor.* I. CK : CP=CR : CF, and CF=$\frac{CP \times CR}{CK}$. Now CP×CR is a conftant quantity; and therefore CF is reciprocally as CK, which evidently varies with a variation of the arch VP. Hence it follows, that all the rays flowing from R are not collected at the conjugate focus F. The ultimate fituation of the point F, as the point P gradually approaches to, and at laft coincides with, V, is called *the conjugate focus of central rays*; and the diftance between this focus and the focus of a lateral ray is called *the aberration* of that ray, arifing from the fpherical figure. There are, however, two fituations of the point R fuch, that all the rays which flow from it are made to diverge from one point. One of thofe is C (*fig.* 5.) becaufe they all pafs through without refraction, and therefore ftill diverge from C; the other is when rays in the rare medium with a convex furface flow from a point R, fo fituated beyond the centre that CV is to CR as the fine of incidence in the rare medium is to the fine of refraction in the denfer, or when rays in the rare medium fall on the convex furface of the denfer, converging to F, fo fituated that CF : CV=$m : n$. In this cafe they will all be difperfed from F, fo fituated that CV : CF=$n : m$,=CR : CV for fine RPC : fine RKC=$n : m$,=CR : CP,=fine RPC : fine PRC. Therefore the angle PRC is equal to RKC, or to FPC (by conftruction of the problem); and the angle C is common to the triangles PRC, FPC; they are therefore fimilar, and the angles PRC, FPC are equal, and $n : m$=CP : CF=CK : CR,=CR : CP; therefore CP : CK=CP^2 : CR^2: but CP and CR are conftant quantities, and therefore CK is a conftant quantity, and (by the corollary) CF is a conftant quantity, and all the rays flowing from R are difperfed from F by refraction. In like manner rays verging to F will by refraction converge to R. This was firft obferved by Huygens.

275. II. If the incident ray R'P (*fig.* 5.) is parallel to the axis RC, we have PO to CO as the fine of incidence to the fine of refraction. For the triangles R'PK' PCO are fimilar, and PO : CO=R'K' : R'P,=$m : n$.

276. III. In this cafe, too, we have the focal diftance of central parallel rays reckoned from the vertex=$\frac{m}{m-n} \times$VC. For fince PO is ultimately VO, we have $m : n$=VO : CO, and $m-n$: m=VO−CO : VO,=VC : CO, and VO=$\frac{m-n}{m} \times$VC. This is called the principal focal diftance of parallel rays. Alfo CO, the principal focal diftance reckoned from the centre, =$\frac{n}{m-n} \times$VC.—*N. B.* When m is lefs than n, $m-n$ is a negative quantity.—In applying fymbols to this computation of the focal diftances, thofe lines are to be accounted pofitive which lie from their beginnings, that is, from the vertex, or the centre, or the radiant point, in the direction of the incident rays. Thus when rays diverge from R on the convex furface of a medium, VR is accounted negative and VC pofitive. If the light paffes out of air into glafs, m is greater than n; but if it paffes out of glafs into air, m is lefs than n. If, therefore, parallel rays fall on the convex furface of glafs out of air, in which cafe $m : n$=3 : 2 very nearly, we have for the principal focal diftance $\frac{3}{3-2}$VC, or +3VC. But if it pafs out of glafs into the convex furface of air, we have VO=$\frac{2}{2-3}$VC, or −2VC; that is, the focus O will be in the fame fide of the furface with the incident light. In like manner, we fhall have for thefe two cafes CO=+2VC and −3VC.

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277. IV. By construction we have

$$RK : RP = m : n$$

by similarity of triangles $PF : RK = CF : CR$

therefore $PF : PR = mCF : nCR$

and $mPR \times CF = nCR \times PF$

therefore $mPR : nCR = PF : CF$

and $mPR - nCR : mPR = PF - CF : PF$

ultimately $mVR - nCR : mVR = VC : VF$.

This is a very general optical theorem; and affords an easy method for computing the focal distance of refracted rays. For this purpose let VR, the distance of the radiant point, be expressed by the symbol r, the distance of the focus of refracted rays by the symbol f, and the radius of the spherical surface by a; we have

$$mr - nr - a : mr = a : f, \text{ and}$$

$$f = \frac{mar}{mr - nr - a}, = \frac{mar}{m - nr \times nd}$$

In its application due attention must be paid to the quantities of r and a, whether they be positive or negative, according to the conditions of last corollary.

278. V. If Q (*Plate* 252, *fig.* 8.) be the focus of parallel rays coming from the opposite side, we shall have $RQ : QC = RV : VF$. For draw Cq parallel to PF, cutting RP in q: the $Rq : qC = RP : PF$. Now q is the focus of the parallel rays FP, Cq. And when the point P ultimately coincides with the point V. q must coincide with Q, and we have $RQ : QC = RV : VF$. This is the most general optical theorem, and is equally applicable to lenses, or even to a combination of them, as to simple surfaces. It is also applicable to reflections, with this difference, that Q is to be assumed the focus of parallel rays coming the *same* way with the incident rays. It affords the most compendious method of computing symbolically and arithmetically the focal distances in all cases.

279. VI. We have also $Rq : RP = RV : RF$, and ultimately for central rays $RQ : RV = RV : RF$, and $RF = \frac{RV^2}{RQ}$. This proposition is true in lenses and mirrors, but not in single refracting substances.

280. VII. Also $Rq : RC = RP : RF$, and ultimately $RQ : RV = RC : RF$, and $RF = \frac{RV \times RC}{RQ}$

N. B. These four points Q, V, C, F, either lie all one way from R, or two of them forward and two backward.

281. VIII. Also, making O the principal focus of rays coming the same way, we have $Rq : qC = Co : oF$, and ultimately $RQ : QC = CO : OF$, and $OF = \frac{QC \times CO}{RQ}$, and therefore reciprocally proportional to RQ, because $QC \times co$ is a constant quantity. These corollaries or theorems give us a variety of methods for finding the focus of refracted rays, or the other points related to them; and each formula contains 4 points, of which any three being given, the 4th may be found. Perhaps the last is the most simple, as the quantity $oc \times cQ$ is always negative, because o and Q are on different sides.

282. IX. From this construction we may also derive a very easy and expeditious method of drawing many refracted rays. Draw through the centre C (*fig.* 15, 16.) a line to the point of incidence P, and a line CA parallel to the incident ray RP. Take VO to VC as the sine of incidence to the sine of refraction, and about A, with the radius VO, describe an arch of a circle cutting PC produced in B. Join AB; and PF parallel to AB is the refracted ray. When the incident light is parallel to RC, the point A coincides with V, and a circle described round V with the distance VO will cut the lines PC, pC, &c. in the points B, b. The demonstration is evident. Having thus determined the focal distance of refracted rays, it will be proper to point out a little more particularly its relation to its conjugate focus of incident rays. We shall consider the 4 cases of light incident on the convex or concave surface of a denser or a rarer medium.

283. I. Let light moving in air fall on the convex surface of glass. (*Plate* CCLII. *fig.* 5. to *fig.* 14.) Let us suppose it tending to a point beyond the glass infinitely distant. It will be collected to its principal focus o beyond the vertex V. Now let the incident light converge a little, so that R is at a great distance beyond the surface. The focus of refracted rays F will be a little within O or nearer to V. As the incident rays are made to converge more and more, the point R comes nearer to V, and the point F also approaches it, but with a much slower motion, being always situated between O and C till it is overtaken by R at the centre C, when the incident light is perpendicular to the surface in every point, and therefore suffers no refraction. As R has overtaken F at C, it now passes it, and is again overtaken by it at V. Now the point R is on the side from which the light comes, that is, the rays diverge from R. After refraction they will diverge from F a little without R; and as R recedes farther from V, F recedes still farther, and with an accelerated motion, till, when R comes to Q, F has gone to an infinite distance, or the refracted rays are parallel. When R still recedes, F now appears on the other side, or beyond V; and as R recedes back to an infinite distance, F has come to O: and this completes the series of variations, the motion of F during the whole changes of situation being in the same direction with the motion of R.

284. II. Let the light moving in air fall on the concave surface of glass; and let us begin with parallel incident rays, conceiving, as before, R to lie beyond the glass at an infinite distance. The refracted rays will move as if they came from the principal focus O, lying on that side of the glass from which the light comes. As the incident rays are made gradually more converging, and the point of convergence R comes towards the glass, the conjugate focus F moves backward from O; the refracted rays growing less and less diverging, till the point R comes to Q, the principal focus on the other side. The refracted rays are now parallel, or F has retreated to an infinite distance. The incident light converging still more, or R coming between Q and V, F will appear on the other side, or beyond the surface, or within the glass, and will approach it with a retarded motion, and finally overtake R at the surface of the glass. Let R continue its motion backwards (for it

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Fig. 1.

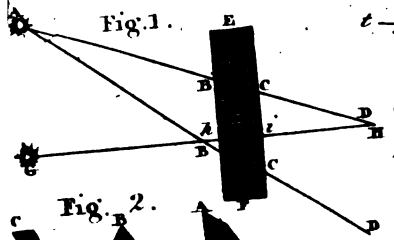


Fig. 2.

Fig. 3.

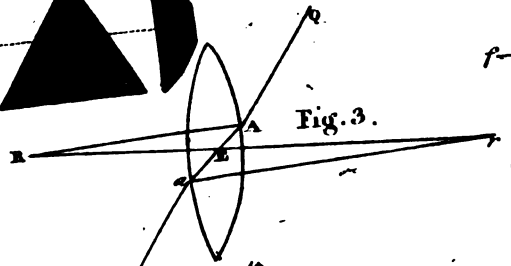


Fig. 4.

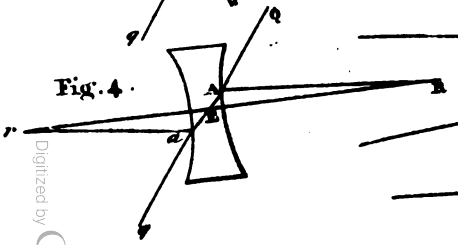


Fig. 7.

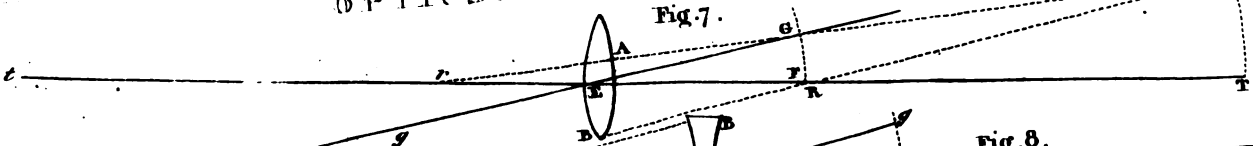


Fig. 8.

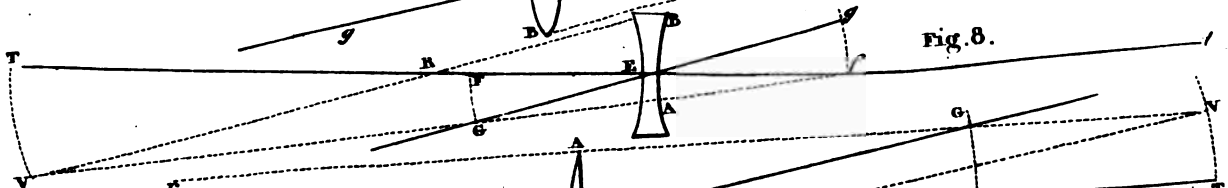


Fig. 9.

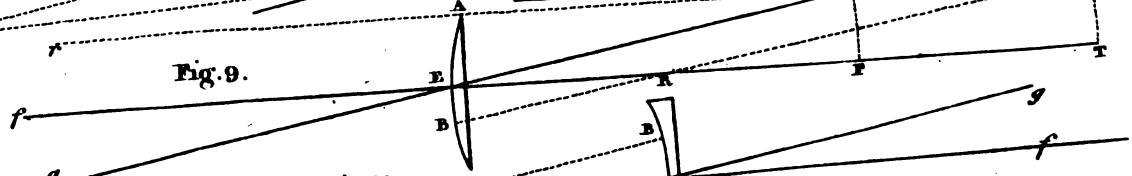


Fig. 10.

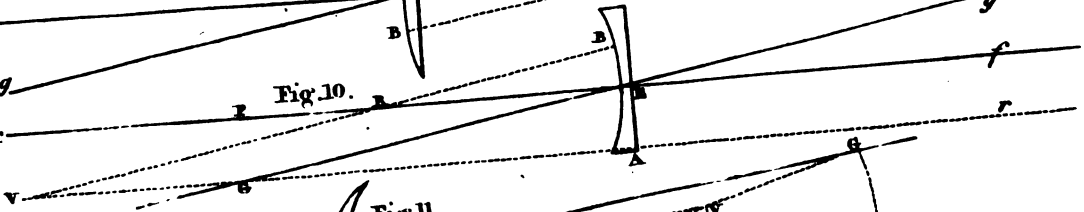


Fig. 11.

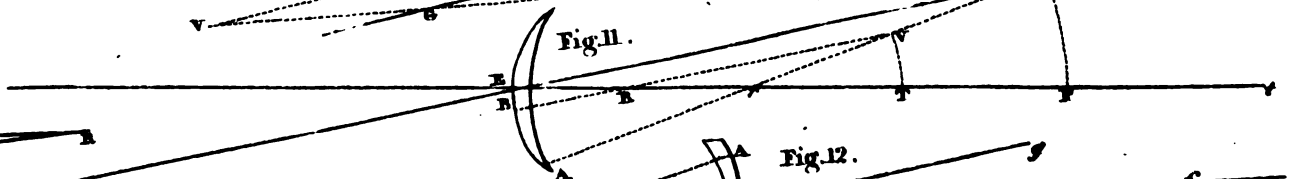


Fig. 12.

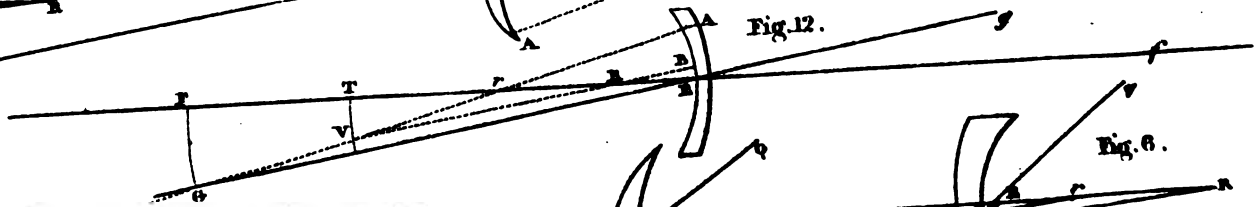


Fig. 13.

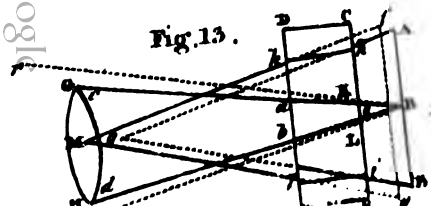


Fig. 14.

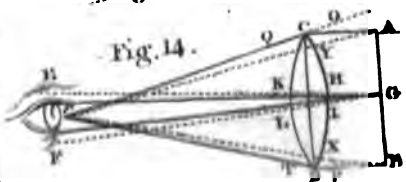


Fig. 5.

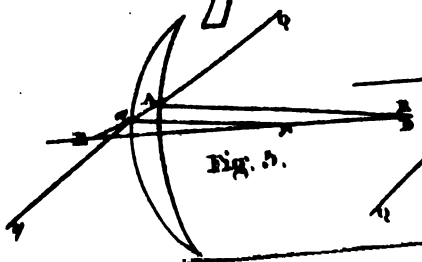
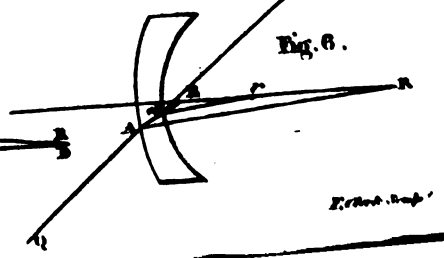


Fig. 6.



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it has all the while been moving backwards, or in a direction contrary to that of the light); that is, let R now be a radiant point, moving backwards from the surface of the glass. F will at first be without it, but will be overtaken by it at the centre C, when the rays will suffer no refraction. R still receding, will get without F; and while R recedes to an infinite distance, F will recede to O, and the series will be completed.

285. III. Let the light moving in glass fall on the convex surface of air; that is, let it come out of the concave surface of glass, and let the incident rays be parallel, or tending to R, infinitely distant; they will be dispersed by refraction from the principal focus O within the glass. As they are not more converging, R comes near, and F retreats backwards, till R comes to Q, the principal focus without the glass, and the refracted rays are parallel. R still coming nearer, F now appears before the glass, overtakes R at the centre C, and is again overtaken by it at V. R now becoming a radiant point within the glass, F follows it backwards, and arrives at O, when R has receded to an infinite distance, and the series is completed.

286. IV. Let the incident light, moving in glass, fall on the concave surface of air, or come out of the convex surface of glass. Let it tend to a point R at an infinite distance without the glass. The refracted rays will converge to O, the principal focus without the glass. As the incident light is made more converging, R comes towards the glass, while F, setting out from *v*, also approaches the glass, and R overtakes it at the surface V. R now becomes a radiant point within the glass, receding backwards from the surface. F recedes slower at first, but overtakes R at the centre C, and passes it with an accelerated motion to an infinite distance; while R retreats to Q, the principal focus within the glass. R still retreating, F appears before the glass; and while R retreats to an infinite distance, F comes to V, and the series is completed.

§ IV. *Of* GLASSES.

287. Glass for optical purposes may be ground into nine different shapes. Glasses cut into five of those shapes are called *lenses*, which, together with their axes, are described under DIOPTRICS, *Sect.* I, § 15, 16. The other 4 are,

288. 1. A *plane glass*, which is flat on both sides, and of equal thickness in all its parts, as EF, *Pl.* CCLIII, *fig.* 1.

289. 2. A *flat plano-convex*, whose convex side is ground into several little flat surfaces, as A, *fig.* 2.

290. 3. A *prism*, which has three flat sides, and when viewed endwise appears like an equilateral triangle, as B.

291. 4. A *concavo-convex* glass, as C, which has hitherto received no name, and is seldom, if ever, made use of in optical instruments.

292 A ray of light G*h* (*fig.* 1.) falling perpendicularly on a plane glass EF, will pass through the glass in the same direction *hi* and go out of it into the air in the same straight line *i*H. A ray of light AB falling obliquely on a plane glass, will go out of the glass in the same direction, but not in the same straight line: for in touching the glass, it will be refracted in the line BC; and in leaving the glass, it will be refracted in the line CD.

293. *Lemma.* There is a certain point E (*Plate* 253. *fig.* 3, to 6.) within every double convex or double concave lens, through which every ray that passes will have its incident and emergent parts QA, *aq* parallel to each other: but in a plano-convex or plano-concave lens, that point E is removed to the vertex of the concave or convex surface; and in a meniscus, and in that other concavo-convex lens, it is removed a little way out of them, and lies next to the surface which has the greatest curvature. For let R*Er* be the axis of the lens joining the centres R *r* of its surfaces A *a*. Draw any two of their semidiameters RA, *ra* parallel to each other, and join the points A, *a*, and the line A*a* will cut the axis in the point E above described. For the triangles REA, *rEa*, being equiangular, RE will be to E*r* in the given ratio of the semidiameters RA, *ra*; and consequently the point E is invariable in the same lens. Now supposing a ray to pass both ways along the line A*a*, it, being equally inclined to the perpendiculars to surfaces, will be equally bent, and contrarywise in going out of the lens; so that its emergent parts AQ, *aq* will be parallel. Now any of these lenses will become plano-convex or plano-concave, by conceiving one of the semidiameters RA, *ra* to become infinite, and consequently to become parallel to the axis of the lens, and then the other semidiameter will coincide with the axis; and so the points A E or *a* E will coincide. Q. E. D.

294. *Corol.* Hence when a pencil of rays falls almost perpendicularly upon any lens, whose thickness is inconsiderable, the course of the ray, which passes through E, above described, may be taken for a straight line passing through the centre of the lens, without sensible error in sensible things. For it is manifest from the length of A*a* and from the quantity of the refractions at its extremities, that the perpendicular distance of AQ, *aq* when produced, will be diminished both as the thickness of the lens and the obliquity of the ray is diminished.

295. PROPOSITION I. To find the focus of parallel rays falling almost perpendicularly upon any given lens. Let E (*Plate* 253. *fig.* 7, to 12.) be the centre of the lens, R and *r* the centres of its surfaces, R*r* its axis, *g*EG, a line parallel to the incident rays upon the surface B, whose centre is R. Parallel to *g*E draw a semidiameter BR, in which produced let V be the focus of the rays after their first refraction at the surface B, and joining V*r*, let it cut *g*E produced in G, and G will be the focus of the rays that emerge from the lens. For since V is also the focus of the rays incident upon the second surface A, the emergent rays must have their focus in some point of that ray which passes straight through this surface; that is, in the line V*r*, drawn through its centre *r*: and since the whole course of another ray is reckoned a straight line *g*EG, its intersection G with V*r* determines the focus of them all. Q. E. D.

296. *Corol.* 1. When the incident rays are parallel to the axis *r*R, the focal distance EF is equal to EG. For let the incident rays that were parallel to *g*E be gradually more inclined to the axis till they become parallel to it; and their first and second focuses V and G will

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describe circular arches VT and GF whose centres are R and E. For the line RV is invariable; being in proportion to RB in a given ratio of the leſſer of the ſines of incidence and refraction to their difference by a former propoſition; conſequently the line EG is alſo invariable, being in proportion to the given line RV in the given ratio of rE to rR, becauſe the triangles EGr, RVr are equiangular.

197. *Corol.* 2. The laſt proportion gives the following rule for finding the focal diſtance of any thin lens. As Rr, the interval between the centres of the ſurfaces, is to rE, the ſemidiameter of the ſecond ſurface, ſo is RV to RT, the continuation of the firſt ſemidiameter to the firſt focus, to EG or EF, the focal diſtance of the lens; which, according as the lens is thicker or thinner in the middle than at its edges, muſt lie on the ſame ſide as the emergent rays, or on the oppoſite ſide.

198. *Corol.* 3. Hence when rays fall parallel on both ſides of any lens, the focal diſtances EF Ef are equal. For let rt be the continuation of the ſemidiameter Er to the firſt focus t of rays falling parallel upon the ſurface A; and the ſame rule that gave rR to rE as RT to EF, gives alſo rR to RE as rt to Ef. Whence Ef and EF are equal, becauſe the rectangles under rE, RT and alſo under RE, rt are equal. For rE is to rt and alſo RE to RT in the ſame given ratio.

199. *Corol.* 4. Hence in particular in a double-convex or double-concave lens made of glaſs, it is as the ſum of their ſemidiameters (or in a meniſcus as their difference) to either of them, ſo is double the other, to the focal diſtance of the glaſs. For the continuations RT rt are ſeverally double their ſemi-diameters; becauſe in glaſs ET is to TR and alſo Et to tr as 3 to 2.

200. *Corol.* 5. Hence if the ſemidiameters of the ſurfaces of the glaſs be equal, it's focal diſtance is equal to one of them; and is equal to the focal diſtance of a plano-convex or plano-concave glaſs whoſe ſemidiameter is as ſhort again. For conſidering the plane ſurface as having an infinite ſemidiameter, the firſt ratio of the laſt mentioned proportion may be reckoned a ratio of equality.

201. PROP. II. The focus of incident rays upon a ſingle ſurface, ſphere, or lens being given, it is required to find the focus of the emergent rays? Let any point Q (*fig.* 1, to 6, *Pl.* CCLIV.) be the focus of incident rays upon a ſpherical ſurface, lens, or ſphere, whoſe centre is E; and let other rays come parallel to the line QEq the contrary way to the given rays, and after refraction let them belong to a focus F; then taking Ef equal to EF in the lens or ſphere, but equal to FC in the ſingle ſurface, ſay as QF to FE ſo Ef to fq; and placing fq the contrary way from f to that of FQ from F, the point q will be the focus of the refracted rays, without ſenſible error; provided the point Q be not ſo remote from the axis, nor the ſurfaces ſo broad, as to cauſe any of the rays to fall too obliquely upon them. For with the centre E and ſemidiameters EF and Ef deſcribe two arches FG, fg cutting any ray QA aq in G and g, and draw EG and Eg. Then ſuppoſing G to be a focus of incident rays (as GA), the emergent rays (as agq) will be parallel to GE; and on the other hand ſuppoſing g another focus of incident rays (as ga) the emergent rays (as AGQ) will be parallel to gE. Therefore the triangles QGE, Egq are equiangular, and conſequently QG is to GE as Eg to gq; that is, when the ray $QAaq$ is the neareſt to QEq, QF is to FE as Ef to fg. Now when Q accedes to F and coincides with it, the emergent rays become parallel, that is q recedes to an infinite diſtance; and conſequently when Q paſſes to the other ſide of F, the focus q will alſo paſs through an infinite ſpace from one ſide of f to the other ſide of it. Q. E. D.

202. *Corol.* 1. In a ſphere or lens the focus q may be found by this rule: As QF to QE ſo QE to Qq, to be placed the ſame way from Q as QF lies from Q. For let the incident and emergent rays QA qa be produced till they meet in e; and the triangles QGE, Qeq being equiangular, we have QG to QE as Qe to Qq; and when the angles of theſe triangles are vaniſhing, the point e will coincide with E; becauſe in the ſphere the triangle Aea is equiangular at the baſe Aa, and conſequently Ae and ae will at laſt become ſemidiameters of the ſphere. In a lens the thickneſs Aa is inconſiderable. The focus may alſo be found by this rule;—QF : FE : : QE : Eq. for QG ; GE : : QA : Aq. And then the rule formerly demonſtrated for ſingle ſurfaces holds good for the lenſes.

203. *Corol.* 2. In all caſes the diſtance fq varies reciprocally as FQ does; and they lie contrary-wiſe from f and F; becauſe the rectangle or the ſquare under EF and Ef, the middle terms in the foregoing proportions, is invariable. The principal focal diſtance of a lens may not only be found by collecting the rays coming from the ſun, conſidered as parallel, but alſo (by means of this propoſition) it may be found by the light of a candle or window. For, becauſe Qq : qA : : QE : EG, we have (when A coincides with E) Qq ; qE = QE : EF; that is, the diſtance obſerved between the radiant object and its picture in the focus is to the diſtance of the lens from the focus as the diſtance of the lens from the radiant is to its principal focal diſtance. Multiply therefore the diſtances of the lens from the radiant and focus, and divide the product by their ſum.

204 *Corol.* 3. Convex lenſes of different ſhapes that have equal focal diſtances, when put into each others places, have equal powers upon any pencil of rays to refract them to the ſame focus. Becauſe the rules above-mentioned depend only upon the focal diſtance of the lens, and not upon the proportion of the ſemidiameters of its ſurfaces.

205. *Corol* 4. The rule that was given for a ſphere of an uniform denſity, will ſerve alſo for finding the focus of a pencil of rays refracted through any number of concentric ſurfaces, which intercede uniform mediums of any different denſities. For when rays come parallel to any line drawn through the common centre of theſe mediums, and are refracted through them all, the diſtance of their focus from that centre is invariable, as in an uniform ſphere.

206. *Corol.* 5. When the focuſes Q q lie on the ſame ſide of the refracting ſurfaces, if the incident rays flow from Q, the refracted rays will alſo flow from q; and if the incident rays flow towards Q, the refracted will alſo flow towards q; and the contrary

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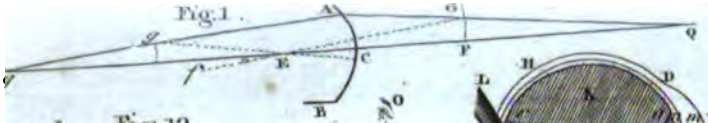
OPTICS.

Fig. 1.



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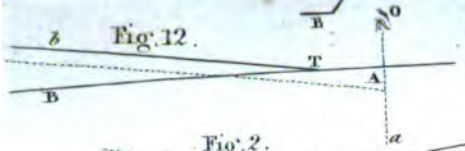

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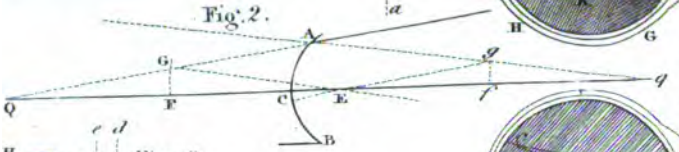

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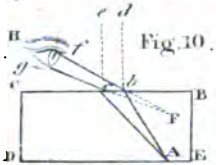

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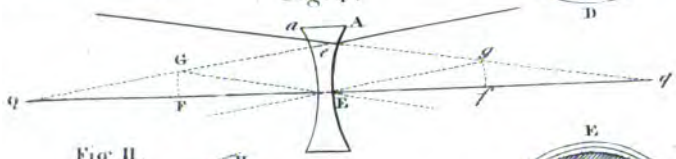

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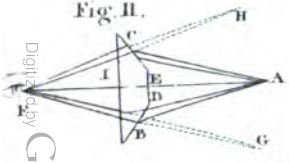

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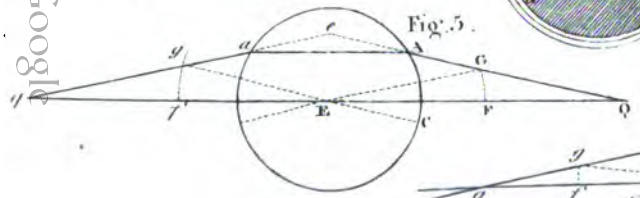

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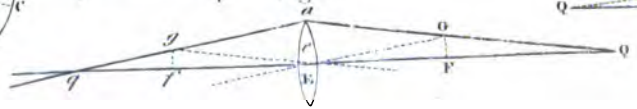

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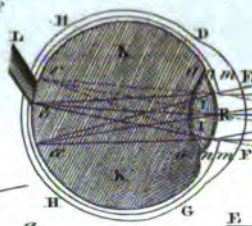

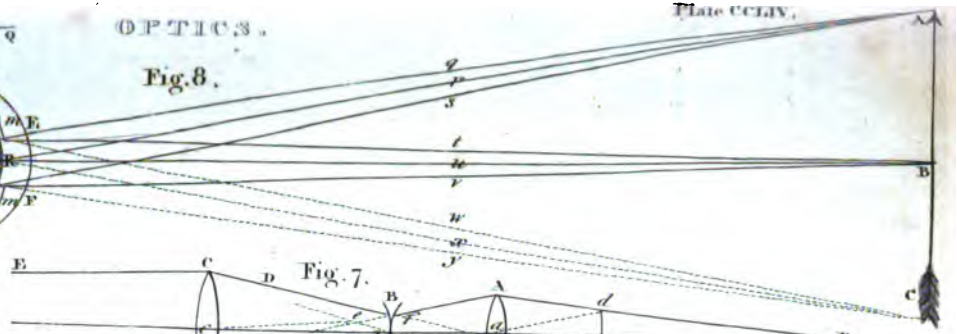

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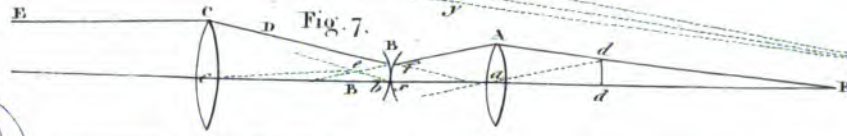

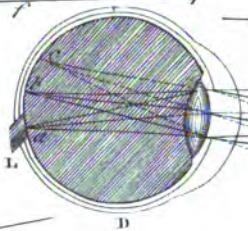

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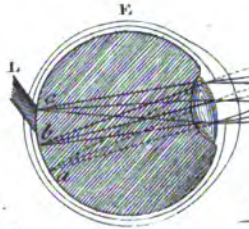

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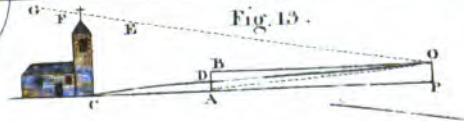

Fig. 6.

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trary will happen when Q and *q* are on contrary sides of the refracting surfaces; because the rays are continually going forwards. From this proposition we also derive an easy method of drawing the progress of rays through any number of lenses ranged on a common axis. Let A, B, C. (*fig.* 7. *pl.* 254.) be the lenses, and RA a ray incident on the first of them. Let α, β, $\varkappa$ be their foci for parallel rays coming in the opposite direction; draw the perpendicular *a B* cutting the incident ray in *d*, and draw *d e* through the centre of the lens: Through the focus of the second lens draw the perpendicular $\beta' e$, cutting AB in *e*; and draw *eb* through the centre of the second lens. BD parallel to *b c* will be the next refracted ray. Through the focus $\varkappa$ of the third lens draw the perpendicular $\varkappa f$, cutting BD in *f*, and draw *fc* through the centre of the third lens. CE parallel to *f c* will be the refracted ray; and so on.

SECT. III. *Of* VISION.

307. HAVING described how the rays of light, flowing from objects, and passing through convex glasses, are collected into points, and form the images of the objects; it will be easy to understand how the rays are affected by passing through the humours of the eye, and are thereby collected into innumerable points on the bottom of the eye, and thereon form the images of the objects which they flow from. For the different humours of the eye, and particularly the crystalline humour, are to be considered as a convex glass; and the rays in passing through them to be affected in the same manner as in passing through a convex glass. A description of the coats and humours, &c. has been given at large under ANATOMY; and therefore we shall repeat in this place no more of the description than is necessary to render our subject intelligible.

308. The EYE is nearly globular. It consists of three coats and three humours. The part DHHG (*fig.* 8. *Pl.* CCLIV.) of the outer coat, is called the *sclerotica*; the rest, DEFG, the *cornea*. Next, within this coat is the *choroides*, which serves for a lining to the other, and joins with the iris, *mn*, *mn*. The *iris* is composed of two sets of muscular fibres; the one of a circular form, which contracts the hole in the middle called the *pupil*, when the light would otherwise be too strong for the eye: and the other of radical fibres, tending everywhere from the circumference of the iris towards the middle of the pupil; which fibres, by their contraction, dilate and enlarge the pupil when the light is weak, in order to let in the more of its rays. The third coat is only a fine expansion of the optic nerve L, which spreads like net work all over the infide of the choroides, and is therefore called the *retina*; upon which are painted (as it were) the images of all visible objects, by the rays of light which either flow or are reflected from them.

309. Under the cornea is a fine transparent fluid like water, which is therefore called the AQUEOUS HUMOUR. It gives a protuberant figure to the cornea, fills the two cavities *mm* and *nn*, which communicate by the pupil P; and has the same limpidity, specific gravity, and refractive power, as water. At the back of this lies the crystalline humour II, which is shaped like a double convex glass; and is a little more convex on the back than the forepart. It converges the rays, which pass through it from every visible object to its focus at the bottom of the eye. This humour is transparent like crystal, is much of the consistence of hard jelly, and exceeds the specific gravity of water in the proportion of 11 to 10. It is inclosed in a fine transparent membrane, from which proceed radial fibres *o o*, called the *ligamentum ciliare*, all round its edge, and join to the circumference of the iris.

310. At the back of the crystalline, lies the VITREOUS HUMOUR KK, which is transparent like glass, and is largest of all in quantity, filling the whole orb of the eye, and giving it a globular shape. It is much of a consistence with the white of an egg, and very little exceeds the specific gravity and refractive power of water.

311. As every point of an object ABC, (*ibid.*) sends out rays in all directions, some rays, from every point on the side next the eye, will fall upon the cornea between E and F; and by passing on through the humours and pupil of the eye, they will be converged to as many points on the retina or bottom of the eye, and will thereon form a distinct inverted picture *c b a* of the object. Thus, the rays *q r s* that flow from the point A of the object, will be converged to the point *a* on the retina; those from the point B will be converged to the point *b*; those from the point C will be converged to the point *c*; and so of all the intermediate points; by which means the whole image *a b c* is formed, and the object made visible. The method by which this sensation is carried from the eye, by the optic nerve, to the common sensory in the brain, and there discerned, is above the reach of our comprehension. But that vision is effected in this manner may be demonstrated experimentally. Take a bullock's eye whilst it is fresh; and having cut off the three coats from the back part, quite to the vitreous humour, put a piece of white paper over that part and hold the eye towards any bright object, and you will see an inverted picture of the object upon the paper. Since the image is inverted, many have wondered why the object appears upright. But we are to consider, 1. That *inverted* is only a relative term: and, 2. That there is a very great difference between the real object and the means or image by which we perceive it. When all the parts of a distant prospect are painted upon the retina, they are all right with respect to one another, as well as the parts of the prospect itself; and we can only judge of an object being inverted, when it is turned reverse to its natural position with respect to other objects, which we see and compare it with. See a discussion of this argument under ANATOMY.

312. In *fig.* 9. *Pl.* CCLIV. is exhibited the manner of seeing the same object ABC, by both eyes D and E at once. When any part of the image *c b a* falls upon the optive nerve L, the corresponding part of the object becomes invisible. On which account the optic nerve of each eye is wisely placed, not in the middle of the bottom of the eye, but towards the side next the nose; so that whatever part of the image falls upon the optic nerve of one eye, may not fall upon the optic nerve of the other. Thus

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Thus the point *a* of the image *c b a* falls upon the optic nerve of the eye D; but not of the eye E; and the point *c* falls upon the optic nerve of the eye E, but not of the eye D; and therefore, to both eyes taken together, the whole object ABC is visible.

313. The nearer that any object is to the eye, the larger is the angle under which it is seen, and the magnitude under which it appears. Thus to the eye D, (*fig. 1. Pl.* CCLV.) the object ABC is seen under the angle APC; and its image *c b a* is very large upon the retina: but to the eye E, at a double distance, the same object is seen under the angle AeC, which is equal only to half the angle APC, as is evident by the figure. The image *c b a* is likewise twice as large in the eye D, as the other image *c b a* is in the eye E. In both these representations, a part of the image falls on the optic nerve, and the object in the corresponding part is invisible.

314. As the sense of seeing is allowed to be occasioned by the impulse of the rays from the visible object upon the retina of the eye, and forming the image of the object thereon, and that the retina is only the expansion of the optic nerve all over the choroides; it should seem surprising, that the part of the image which falls on the optic nerve should render the like part of the object invisible; especially as that nerve is allowed to be the instrument by which the impulse and image are conveyed to the common sensory in the brain. That the part of the image which falls upon the middle of the optic nerve is lost, and consequently the corresponding part of the object is rendered invisible, is plain by experiment. For if a person fixes three patches, A, B, C. (*fig. 2. Pl.* CCLV.) upon a white wall, at the height of the eye, and at the distance of about a foot from each other, and places himself before them, shutting the right eye, and directing the left towards the patch C, he will see the patches A and C, but the middle patch B will disappear. Or, if he shuts his left eye, and directs the right towards A, he will see both A and C, but B will disappear; and if he directs his eye towards B, he will see both B and A, but not C. For whatever patch is directly opposite to the optic nerve N, vanishes. This requires a little practice; after which he will find it easy to direct his eye so as to lose the sight of whichever patch he pleases.

315. This experiment, first tried by M. MARIOTTE, occasioned a new hypothesis concerning the seat of vision, which he supposed not to be in the *retina*, but in the *choroides*. An improvement was afterwards made upon it by M. PICARD; which was farther improved by M. Marriotte, and still farther by M. Le Cat; but as all of them were difficult to execute, we need only describe the latest and best. The manner in which this curious experiment is now generally made, and which is both the easiest with respect to the eye, and the most indisputable with respect to the fact, is the following. Let 3 pieces of paper be fastened upon the side of a room, about two feet asunder; and let a person place himself opposite to the middle paper, and beginning near to it, retire gradually backwards, all the while keeping one of his eyes shut, and the other turned obliquely towards that outside paper which is towards the covered eye, and he will find a situation (which is generally at about 5 times the distance at which the papers are placed from one another), where the middle paper will entirely disappear, while the two outermost continue plainly visible; because the rays which come from the middle paper will fall upon the retina where the optic nerve is inserted.

316. M. MARRIOTTE was led by this remarkable observation to suspect that the retina is not the place at which the pencils of rays are terminated, and of course not the proper seat of vision. A variety of other arguments in favour of the choroides occurred to him, particularly his observation, that the retina is transparent, as well as the crystalline and other humours of the eye, which he thought could only enable it to transmit the rays farther; and he could not persuade himself that any substance could be considered as being the termination of the pencils, and the proper seat of vision, at which the rays are not stopped in their progress. He was confirmed in his opinion of the small degree of sensibility in the retina, and of the greater sensibility of the choroides, by observing that the pupil dilates itself in the shade, and contracts itself in a great light; which involuntary motion, he thought, was a clear proof that the fibres of the iris are extremely sensible to the action of light; and this part of the eye is only a continuation of the choroides. He also thought that the dark colour of the choroides was intended to make it more susceptible of the impression of light.

317. M. PECQUET, in answer to M. Marriotte's observation concerning the transparency of the retina, says, that it is very imperfectly so, resembling only oiled paper, or the horn that is used for lanterns; and besides, that its whiteness demonstrates it to be sufficiently opaque for stopping the rays of light, as much as is necessary for the purpose of vision; whereas, if vision be performed by means of those rays which are transmitted through such a substance as the retina, it must be very indistinct. As to the blackness of the choroides, which M. Marriotte thought necessary for vision, M. Pecquet observes, that it is not the same in all eyes, and that there are very different shades of it among the individuals of mankind, as also among birds, and some other animals, whose choroides is generally black; and that in the eyes of lions, camels, bears, oxen, stags, sheep, dogs, cats, and many other animals, that part of the choroides which is the most exposed to light, very often exhibits colours as vivid as those of mother-of-pearl, or of the iris. M. MUSSCHENBROECK says, that in many of these animals the choroides is blue, green, or yellow, &c. M. Pecquet admits that there is a defect of vision at the insertion of the optic nerve; but he thought that it was owing to the blood-vessels of the retina, the trunks of which are so large in that place as to obstruct all vision.

318. To M. Pecquet's objection, founded on the opacity of the retina, M. Marriotte observes, that there must be a great difference betwixt the state of that substance in living and dead subjects; and to his remark concerning the blood vessels of the retina, M. Marriotte observes, that they are not

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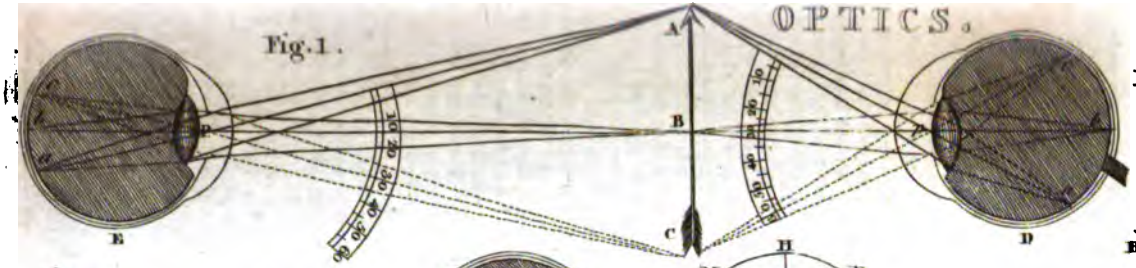
Fig. 1.



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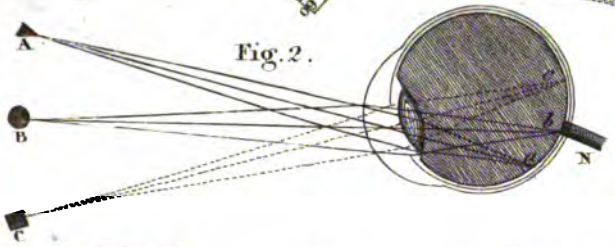
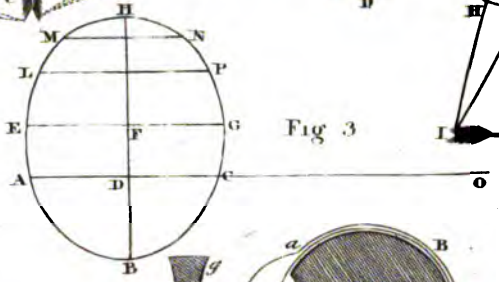


Fig. 3



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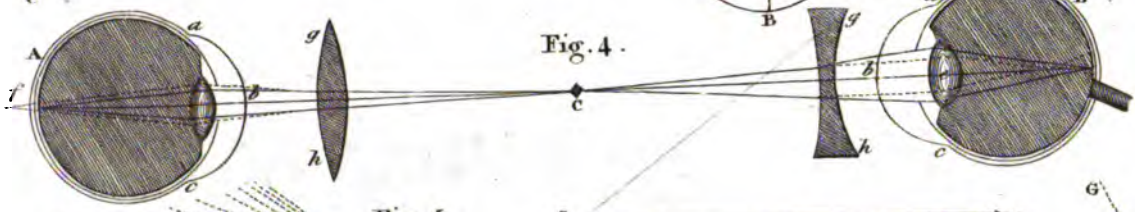

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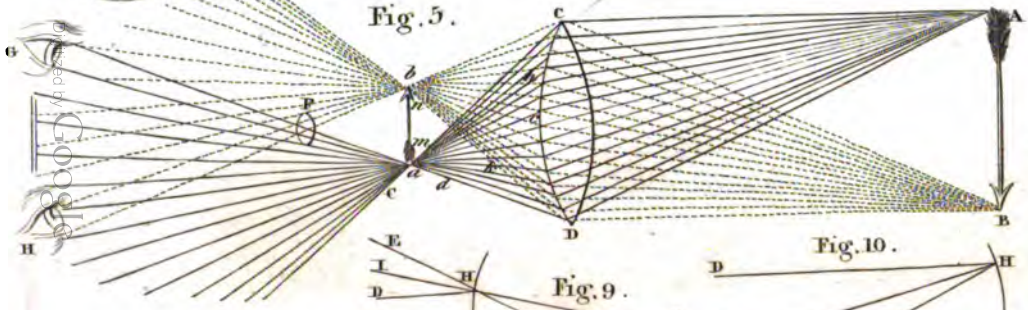

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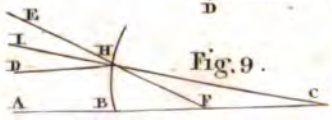


Fig. 10.

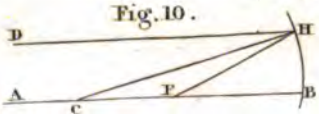


Fig. 12.

Fig. 7.

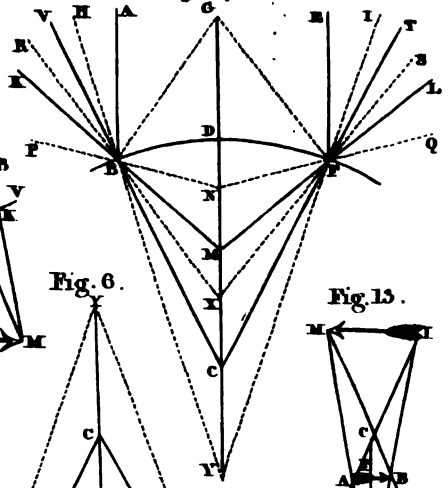


Fig. 6.

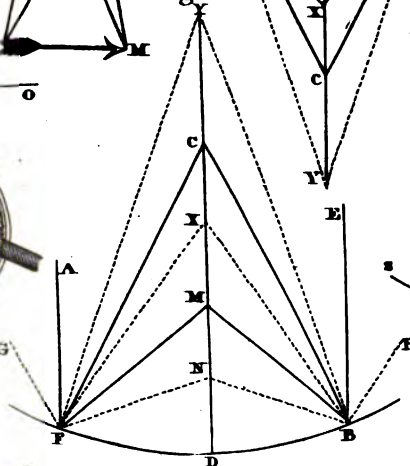


Fig. 13.

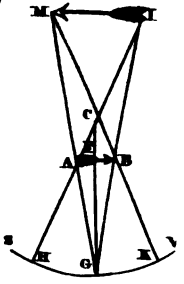


Fig. 8.

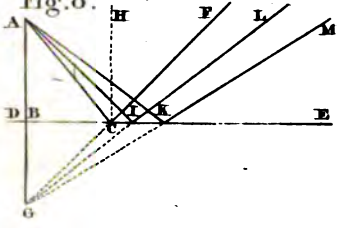
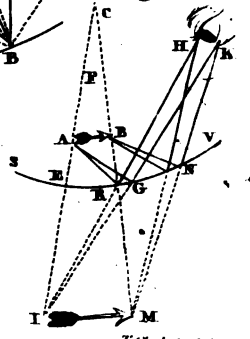


Fig. 11.



T. Clark Sculp.

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not large enough to prevent vision in every part of the base of the nerve, since the diameter of each of the two vessels occupies no more than $\frac{1}{4}$th part of it.

319. The common opinion, however, was favoured by the anatomical description of several animals by the members of the French academy, and particularly their account of the sea-calf and porcupine; in both of which the optic nerve is inserted in the very axis of the eye, exactly opposite to the pupil, which was thought to leave no room to doubt, but that in these animals the retina is perfectly sensible to the impression of light at the insertion of the nerve. M. De la Hire took part with M. Pecquet, arguing in favour of the retina, from the analogy of the senses, in all of which the nerves are the proper seat of sensation. He however, supposed that the choroides receives the impressions of images, to transmit them to the retina. M. Perrault also took the part of M. Pecquet, and in his works we have several letters that passed between him and Marriotte upon this subject.

320. This dispute was revived upon the occasion of an odd experiment of M. Mery, recorded in the *Memoirs of the French Academy* for 1704. He plunged a cat in water, and exposing her eye to the strong light of the sun, observed that the pupil was not at all contracted by it; from which he concluded, that the contraction of the iris is not produced by the action of the light, but by some other circumstance; for he contended, that the eye receives more light in this situation than in the open air. At the same time he observed that the retina of the cat's eye was transparent, and that he could see the opaque choroides beyond it; from which he concludes, that the choroides is the substance intended to receive the rays of light, and to be the chief instrument of vision. But M. De la Hire replies to this argument of M. Mery, in a memoir for 1709, p. 119; in which he endeavours to shew, that fewer rays enter the eye under water, and that in those circumstances it is not so liable to be affected by them. Besides, it is obvious, that the cat must have been in great terror in this situation; and being an animal that has a very great voluntary power over the muscles of the iris, she might keep her eye open from fear, notwithstanding the action of light upon it, and though it might be very painful to her.

321. M. Le Cat took part with M. Marriotte in this controversy, it being peculiarly agreeable to his general hypothesis, wherein he differs from Winslow; viz. that the pia mater, of which the choroides is a production, and not the nerves themselves, is the proper instrument of sensation. He thought that the change which takes place in the eyes of old people (the choroides growing less black with age) favoured his hypothesis, as they do not see with that distinctness with which young persons do. He supposed that the retina answers a purpose similar to that of the scarf-skin; covering the papillæ pyramidales, which are the immediate organs of feeling, or that of the porous membrane which covers the glandulous papillæ of the tongue. The retina, he says, receives the impression of light, moderates it, and prepares it for its proper organ, but is not itself sensible of it.

322. To these arguments in favour of the choroides, alleged by those gentlemen among whom the subject was first discussed, Dr. Priestley, in his history, adds the following, among others that had escaped their notice, but which were suggested to him by his friend Mr Michell. That vision be distinct, the pencils of rays which issue from the several points of any object must be collected either accurately, or at least very nearly, to corresponding points in the eye, which can only be done upon some uniform surface. But the retina being of a considerable thickness, and the whole of it being uniformly nervous, and at least nearly transparent, presents no particular surface; so that, in whatever part of it the pencils be supposed to have their foci, the rays belonging to them will be separated from one another, either before or after they arrive there, and consequently vision will be confused. It is likewise an argument in favour of the choroides being the organ of vision, that it is a substance which receives a more distinct impression from the rays of light than any other membrane in any part of the animal system, whereas the retina is a substance on which the light makes an exceedingly faint impression. Besides, the retina is so situated as to be exposed to many rays besides those which terminate in it, and which, therefore, cannot be subservient to vision, if it be performed there. Now, this is not the case with the choroides, which is in no shape transparent, and has no reflecting substance beyond it. It is favourable to the seat of vision being in the choroides, that we can see a reason for the diversity of its colour in different animals. In all terrestrial animals, which use their eyes by night, the choroides is either of a bright white, or of some very vivid colour, which reflects the light very strongly. Besides, the choroides in brutes is not in general perfectly white, but a little inclined to blue; and is therefore better adapted to see by the fainter coloured light, which chiefly prevails in the night; and more liable to be strongly impressed by the colours to which they are chiefly exposed. On the other hand, the choroides of birds in general, especially eagles, hawks, and other birds of prey, is black; by which means they are able to see with the greatest distinctness, but only in bright day-light. The owl, however, seeking her food by night, has the choroides white like that of a cat. Lastly, in the eyes of man, which are adapted to various uses, the choroides is neither so black as that of birds, nor so white as that of those animals who make the greatest use of their eyes in the night.

323. As to a third hypothesis, which is that of M. De la Hire, which makes both the retina and the choroides equally necessary to vision, and supposes it to be performed by the impression of light on the choroides communicated to the retina, Mr Michell observes, that the perceptions can hardly be supposed to be so acute, when the nerves, which are the chief instruments of sensation, do not receive the impressions immediately, but only after they have been communicated to another substance. Besides, it must be more natural to suppose,

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suppose, that, when the principal impression is made upon the choroides, it is communicated to the brain by its own proper nerves, which are abundantly sufficient for the purpose.

324. The dimensions and precise form of the spot in the eye in which there is no vision, were more accurately calculated by Daniel Bernoulli, in the following manner. He placed a piece of money O (*fig.* 3, *Pl.* CCLV.) upon the floor; and then shutting one of his eyes, and making a pendulum to swing, so that the extremity of it might be nearly in the line AO, he observed at what place C it began to be invisible, and where it again emerged into view at A. Raising the pendulum higher and lower, he found other points, as H, N, P, G, B, at which it began to be invisible; and others, as M, L, E, A, at which it began to be visible again; and drawing a curve through them, he found that it was elliptical; and, with respect to his own eye, the dimensions of it were as follows; OC was 23, AC 10, BD 3, DH 13, and EG 14; so that the centre being at E, the greater axis was to the less as 8 to 7. From these *data*, the plane on which the figure was drawn being obliquely situated with respect to the eye, he found, that the place in the eye that corresponded to it was a circle, the diameter of which was a seventh part of the diameter of the eye, the centre of it being 27 parts of the diameter from the point opposite to the pupil, a little above the middle. He concludes that, in order that this space in which there is no vision may be as small as possible, it is necessary that the nerve should enter the eye perpendicularly, and that both this end, and also its entering the eye at a distance from its axis, are gained by the particular manner in which the two optic nerves unite and become separate again, by crossing one another. In favour of one of the observations of Mr Michell, concerning the use of the choroides in vision, Dr Priestley observes, that Aquapendente mentions the case of a person at Pisa, who could see very well in the night, but very little or none in the day-time. This is also said to be the case with those white people among the blacks of Africa, and the inhabitants of the isthmus of America, who, from this circumstance, are called *moon-eyed*. Our author thinks it probable that their choroides is not of a dark colour, as it is in others of the human species; but white or light coloured, as in those animals which have most occasion for their eyes in the night. See Albinos.

325. But the following considerations are still urged, in favour of the retina being the proper seat of vision. Haller observes, that the choroides cannot be the universal instrument of *vision*, because that sometimes in men and birds, but especially in fishes, it is covered internally with a black mucus, through which the rays cannot penetrate. He speaks of a fibrous membrane in the retina distinct from its pulpy substance. On these fibres, he conjectures, that the images of objects are painted. M. De la Hire's argument in favour of the retina, from the analogy of the senses, is much strengthened by considering, that the retina is a large nervous apparatus, immediately exposed to the impression of light; whereas the choroides receives but a slender supply of nerves, in common with the sclerotica, the conjunctiva, and the eye-lids; and that its nerves are much less exposed to the light than the naked fibres of the optic nerve. Indeed, from anatomical considerations, one might imagine that any other part of the body was as sensible of the impression of light as the choroides.

326. That the optic nerve is of principal use in vision, is farther probable, from several phenomena attending some of the diseases in which the sight is affected. When an amaurosis has affected one eye only, the optic nerve of that eye has been found manifestly altered from its sound state. Dr Priestley was present when Mr Hey examined the brain of a young girl, who had been blind of one eye, and saw that the optic nerve belonging to it was considerably smaller than the other; and he informed him, that, upon cutting into it, he found it to be much harder, and cineritious. As the optic nerve is solely spent in forming the retina, so no function of the eye, not immediately subservient to vision, is affected by an amaurosis. On the contrary, those nerves which go to the choroides are found to retain, in this disease, their natural influence. The iris will contract in a recent gutta serena of one eye if the other remains sound, and is suddenly exposed to a strong light. The sclerotis, conjunctiva, and eye-lids, which receive their nerves from the same branches as the choroides, retain their sensibility in this disorder. The manner in which persons recover from an amaurosis favours the supposition of the seat of vision being in the retina; since those parts which are the most distant from the insertion of the nerve recover their sensibility the soonest, being in those places the most pulpy and softest; whereas there is no reason to think that there is any difference in this respect in the different parts of the choroides. Mr Hey has been repeatedly informed, by persons labouring under an imperfect *amaurosis*, or *gutta serena*, that they could not, when looking at any object with one eye, see it so distinctly when it was placed directly opposite to the pupil, as when it was situated somewhat obliquely. And those persons whom he had known to recover from a perfect amaurosis, first discovered the objects whose images fell upon that part of the retina which is at the greatest distance from the optic nerve.

327. On the whole, if the retina be as transparent as it is generally represented to be, so that the termination of the pencils must necessarily be either upon the choroides, or some other opaque substance interposed between it and the retina, the action and reaction occasioned by the rays of light being at the common surface of this body and the retina, both these mediums (supposing them to be equally sensible to the impression of light) may be equally affected; but the retina, being naturally much more sensible to this kind of impression, may be the only instrument by which the sensation is conveyed to the brain, though the choroides, or the black substance with which it is sometimes lined, may also be necessary for the purpose of *vision*. Indeed, when the reflection of the light is made at the common boundary of any two mediums, it is with no propriety that this effect is ascribed to one of them rather than the other; and the strongest reflections are often made back into the densest mediums, when they have been contiguous

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gnous to the rareſt, or even to a vacuum. This is not far from the hypotheſis of M. de la Hire, and will completely account for the entire defect of viſion at the inſertion of the optic nerve.

328. VISION is diſtinguiſhed into *bright* and *obſcure*, *diſtinct* and *confuſed*.—It is ſaid to be bright, when a ſufficient number of rays enter the pupil at the ſame time; obſcure, when too few. It is diſtinct when each pencil of rays is collected into a focus exactly upon the retina; *confuſed*, when they meet before they come at it, or when they would paſs it before they meet; for, in either of theſe laſt caſes, the rays flowing from different parts of the object will fall upon the ſame part of the retina, which muſt neceſſarily render the image confuſed and indiſtinct. Now, that objects may appear with a due brightneſs, whether more or fewer rays proceed from them, we have a power of contracting or dilating the pupil, by means of the muſcular fibres of the iris, in order to take in more or fewer rays as occaſion requires. But this power has its limits. In ſome animals it is much greater than in others; particularly in ſuch as are obliged to ſeek their food by night as well as by day, as in cats, &c.

329. That the rays may be collected into points exactly upon the retina, that is, that objects may appear diſtinct, whether they be nearer or farther off, *i. e.* whether the rays proceeding from them diverge more or leſs, we have a power of contracting or relaxing the *ligamenta ciliaria*, and thereby altering the form of the cryſtalline humour, and with it the focal diſtance of the rays. Thus, when the object we view is far off, and the rays fall upon the pupil with a very ſmall degree of divergency, we contract the *ligamenta ciliaria*, which, being concave towards the vitreous humour, do thereby compreſs it more than otherwiſe they would do; by which means it is made to preſs harder upon the back ſide of the cryſtalline humour, which is thereby rendered flatter; and thus the rays proceed farther before they meet in a focus, than otherwiſe they would have done. Add to this, that we dilate the pupils of our eyes (unleſs in caſes where the light is ſo ſtrong that it offends the eye), and thereby admit rays into them that are more diverging than thoſe which would otherwiſe enter. And, when the rays come from an object that is very near, and therefore diverge too much to be collected into their reſpective foci upon the retina, by relaxing the *ligamenta ciliaria*, we give the cryſtalline a more convex form, by which means the rays are made to ſuffer a proportionably greater degree of refraction in paſſing through it. Beſides this, by contracting the pupils of our eyes, we exclude the more diverging rays, and admit only ſuch as are more eaſily refracted into their reſpective foci. But viſion is not diſtinct at all diſtances, for our power of contracting and relaxing the *ligamenta ciliaria* is alſo circumſcribed within certain limits.

330. In thoſe eyes where the tunica cornea is very protuberant and convex, the rays of light ſuffer a very conſiderable refraction at their entrance into the aqueous humour, and are therefore collected into a focus before they fall upon the retina, unleſs the object be placed very near, ſo that the rays which enter the eye may have a conſiderable degree of divergency. People that have ſuch eyes are ſaid to be *purblind*. Now, the nearer an object is to the eye, the greater is the image of it therein, as explained above: theſe people, therefore, can ſee much ſmaller objects than others, as ſeeing much nearer ones with the ſame diſtinctneſs; and their light continues good longer than that of other people, becauſe the tunica cornea of their eyes, as they grow old, becomes plainer, for want of that redundancy of humours with which they were filled before. On the contrary, old men having the cornea of their eyes too flat for want of a ſufficient quantity of the aqueous humour to fill them out, if the rays diverge too much before they enter the eye, they cannot be brought to a focus before they reach the retina; on which account thoſe people cannot ſee diſtinctly, unleſs the object be ſituated at a greater diſtance from the eye than is required for thoſe whoſe eyes are of a due form. The latter require the aſſiſtance of convex glaſſes to make them ſee objects diſtinctly; the former of concave ones. For if either the cornea *a b c* (*fig.* 4. *Pl.* CCLV.) or cryſtalline humour *e*, or both, be too flat, as in the eye A, their focus will not be on the retina as at A, where it ought to be, in order to render viſion diſtinct, but beyond the eye as at *f*. This is remedied by placing a convex glaſs *g h* before the eye, which makes the rays converge ſooner, and imprints the image duly on the retina at *d*. Again, if either the cornea or cryſtalline humours, or both, be too convex, as in the eye B, the rays that enter in from the object C will be converged to a focus in the vitreous humour, as at *f*; and by diverging from thence to the retina, will form a very confuſed image thereon; and ſo, of courſe, the obſerver will have as confuſed a view of the object as if his eye had been too flat. This inconvenience is remedied by placing a concave glaſs *g h* before the eye; which glaſs, by cauſing the rays to diverge between it and the eye, lengthens the focal diſtance ſo, that if the glaſs be properly choſen, the rays will unite at the retina, and form a diſtinct image of the object upon it.

331. Such eyes as are of a due convexity, cannot ſee any object diſtinctly at leſs diſtance than ſix inches; and there are numberleſs objects too ſmall to be ſeen at that diſtance, becauſe they cannot appear under any ſenſible angle.—Concerning the leaſt angle under which any object is viſible, there was a debate between Dr HOOKE and HEVELIUS. The former aſſerted, that no object could well be ſeen if it ſubtended an angle leſs than one minute; and, if the object be round, as a black circular ſpot upon a white ground, or a white circle upon a black ground, it follows, from an experiment made by Dr SMITH, that this is near the truth; and thence he calculates, that the diameter of the picture of ſuch leaſt viſible point upon the retina is the 800th part of an inch; which he therefore calls a *ſenſible point of the retina*. On the other hand, Mr COURTIVRON concluded from his experiments, that the ſmalleſt angle of viſion was 40 ſeconds. According to Dr Jurin, there are caſes in which a much ſmaller angle than one minute can be diſcerned by the eye; and in order to our perceiving the impreſſion made

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by any object upon our ſenſes, it muſt either be of a certain degree of force, or of a certain degree of magnitude. For this reaſon, a ſtar, which appears only as a lucid point through a teleſcope, ſubtending not ſo much as an angle of one ſecond, is viſible to the eye; though a white or black ſpot, of 25″ or 30″, is not to be perceived. Alſo a line of the ſame breath with the circular ſpot will be viſible, at ſuch a diſtance as the ſpot is not to be perceived at; becauſe the quantity of impreſſion from the line is much greater than from the ſpot; and a longer line is viſible at a greater diſtance than a ſhorter one of the ſame breadth. He found by experience, that a ſilver wire could be ſeen when it ſubtended an angle of $3\frac{1}{2}''$; and that a ſilk thread could be ſeen when it ſubtended an angle of $2\frac{1}{2}''$.

332. This greater viſibility of a line than of a ſpot ſeems to ariſe only from the greater quantity of the impreſſion; but without the limits of perfect viſion, our author obſerves, that another cauſe concurs, whereby the difference of viſibility between the ſpot and the line is rendered much more conſiderable. For the impreſſion upon the retina made by the line is then not only much greater, but alſo much ſtronger, than that of the ſpot; becauſe the faint image, or penumbra, of any one point of the line, when the whole is placed beyond the limits of diſtinct viſion, will fall within the faint image of the next point, and thereby much increaſe the light that comes from it. In ſome caſes, our author found the cauſe of indiſtinct viſion to be the unſteadineſs of the eye; as our being able to ſee a ſingle black line upon a black ground, and not a white line between two black ones on a white ground. By trying an experiment with two pins of known diameters ſet in a window againſt the ſky light, with a ſpace between them equal in breadth to one of the pins, he found that the diſtance between the pins could hardly be diſtinguiſhed, when it ſubtended an angle of leſs than 40″, though one of the pins alone could be diſtinguiſhed when it ſubtended a much leſs angle. But though a ſpace between two pins cannot be diſtinguiſhed by the eye when it ſubtends an angle leſs than 40″, it would be a miſtake to think that the eye muſt neceſſarily commit an error of 40″ in eſtimating the diſtance between two pins when they are much farther from one another. For if the ſpace between them ſubtend an angle of one minute, and each of the pins ſubtend an angle of 4″, which is greater than the leaſt angle the eye can diſtinguiſh, it is manifeſt that the eye may judge of the place of each pin within two ſeconds at the moſt; and conſequently the error committed in taking the angle between them cannot at the moſt exceed 4″, provided the inſtrument be ſufficiently exact. A black ſpot upon a white ground, or a white ſpot upon a black ground, he ſays, can hardly be perceived by the generality of eyes when it ſubtends a leſs angle than one minute. And if two black ſpots be made upon white paper, with a ſpace between them equal in breadth to one of their diameters, that ſpace is not to be diſtinguiſhed, even within the limits of perfect viſion, under ſo ſmall an angle as a ſingle ſpot of the ſame ſize can be diſtinguiſhed. To ſee the two ſpots diſtinctly, therefore, the breadth of the ſpace between them muſt ſubtend an angle of more than a minute. So that an eye which cannot perceive a ſingle object under a ſmaller angle than one minute, will not perceive the interval between two ſuch objects under a leſs angle than 75 ſeconds.

333. Without the limits of perfect viſion, the diſtance at which a ſingle object ceaſes to be perceivable will be much greater in proportion than the diſtance at which a ſpace of equal breadth between two ſuch objects ceaſes to be perceivable. For, without theſe limits, the image of each of the objects will be attended with a penumbra, and the penumbra of the two near objects will take up part of the ſpace between them, and thereby render it leſs perceivable; but the penumbra will add to the breadth of the ſingle object, and will thereby make it more perceivable, unleſs its image be very faint. Upon the ſame principles he likewiſe accounts for the radiation of the ſtars, whereby the light ſeems to project from them different ways at the ſame time.

334. Mr MAYER made many experiments to aſcertain the ſmalleſt angle of viſion in a variety of reſpects. He began with obſerving at what diſtance a black ſpot was viſible on white paper; and found, that when it could barely be diſtinguiſhed, it ſubtended an angle of about 34 ſeconds. When black lines were diſpoſed with intervals broader than themſelves, they were diſtinguiſhed at a greater diſtance than they could be when the objects and the intervals were of an equal breadth. In all theſe caſes it made no difference whether the objects were placed in the ſhade or in the ſtrong light of the ſun; but when the degrees of light were ſmall, their differences had a conſiderable effect, though by no means in proportion to the differences of the light. For if an object was illuminated to ſuch a degree as to be juſt viſible at the diſtance of 9 feet, it would be viſible at the diſtance of 4 feet, though the light was diminiſhed above 160 times. It appeared in the courſe of theſe experiments, that common day-light is, at a medium, equal to that of twenty-five candles placed one foot from the object.

335. As an image of every viſible object is painted on the retina of each of our eyes, it thence becomes a natural queſtion, Why we do not ſee every thing double? It was the opinion of Sir ISAAC NEWTON and others, that objects appear ſingle becauſe the two optic nerves unite before they reach the brain. But Dr PORTERFIELD ſhows, from the obſervations of ſeveral anatomiſts, that the optic nerves do not mix or contound their ſubſtance being only united by a cloſe cohefion: and objects have appeared ſingle where the optic nerves were found to be disjoined. Dr BRIGGS ſuppoſed that ſingle viſion was owing to the equal tenſion of the correſponding parts of the optic nerves, whereby they vibrated in a ſynchronous manner. But Dr Porterfield ſhows that facts by no means favour this hypotheſis. To account for this phenomenon, he ſuppoſes, that by an original law in our nature, we imagine objects to be ſituated ſomewhere in a right line drawn from the picture of it upon the retina, through the centre of the pupil: conſequently,

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quently, the ſame object appearing to both eyes to be in the ſame place, the mind cannot diſtinguiſh it into two. In anſwer to an objection to this hypotheſis, from objects appearing double when one eye is diſtorted, he ſays the mind miſtakes the poſition of the eye, imagining that it had moved in a manner correſponding to the other, in which caſe the concluſion would have been juſt. The power of habit has generally been thought to be ſufficient to account for this appearance. Originally, every object making two pictures, one in each eye, is imagined to be double; but by degrees, we find, that when two correſponding parts of the retina are impreſſed, the object is but one; but if thoſe correſponding parts be changed, by the diſtortion of one eye, the object muſt again appear double as at the firſt. This ſeems to be verified by Mr Cheſelden; who informs us, that a gentleman, who from a blow on his head had one eye diſtorted, found every object to appear double; but by degrees the moſt familiar ones came to appear ſingle, and in time all objects did ſo, without any amendment of the diſtortion. A caſe ſimilar to this is mentioned by Dr Smith.

336. On the other hand, Dr REID is of opinion, that the correſpondence of the centres of the two eyes, on which ſingle viſion depends, does not ariſe from cuſtom, but from ſome natural conſtitution of the eye and of the mind. He makes ſeveral juſt objections to the caſe of Mr Foſter, recited by Dr Smith and others; and thinks that the caſe of the young man couched by Cheſelden, who ſaw ſingly with both eyes immediately upon receiving his ſight, is deciſive in proof of his ſuppoſition. He alſo found that three young gentlemen, whom he endeavoured to cure of ſquinting, ſaw objects ſingly, as ſoon as ever they were brought to direct the centres of both their eyes to the ſame object, though they had never been uſed to do ſo; and he obſerves, that there are caſes, in which, notwithſtanding the fulleſt conviction of an object being ſingle, no practice of looking at it will ever make it appear ſo, as when it is ſeen through a multiplying glaſs.

337. To all theſe ſolutions of the difficulty reſpecting ſingle viſion by both eyes, objections have been lately made which ſeem inſurmountable, by experiments judiciouſly conceived and accurately conducted. Dr WELLS has ſhown, that it is neither by cuſtom alone, nor by any original property of the eyes alone, that objects appear ſingle; and having demoliſhed the theories of others, he thus accounts for the phenomenon in his *Eſſay on ſimple Viſion*: "The viſible part of an object being compoſed of its viſible diſtance and viſible direction, to ſhow how it may appear the ſame to both eyes, it will be neceſſary to explain in what manner the diſtance and direction, which are perceived by one eye, may coincide with thoſe which are perceived by the other." With reſpect to viſible diſtance, the author's opinion ſeems not to differ from that which we have ſtated elſewhere, (ſee METAPHYSICS, *Sect.* XII.); and therefore we have to attend only to what he ſays of viſible direction. When a ſmall object is ſo placed with reſpect to either eye, as to be ſeen more diſtinctly than in any other ſituation, our author ſays that it is then in the *optic axis*, or the axis of that eye. When the two optic axes are directed to a ſmall object not very diſtant, they may be conceived to form two ſides of a triangle, of which the baſe is the interval between the points of the corners where the axes enter the eyes. This baſe is called the *viſual baſe*; and a line drawn from the middle of it to the point of interſection of the optic axes he calls the *common axis*. He then proceeds to ſhow, that objects *really ſituated* in the *optic* axis do not *appear* to be in that line, but in the *common axis*.

338. He then proves by experiments, for which, as well as for his arguments, we muſt refer to his work, that the objects ſituated in the common axis do not *appear* to be in that line, but in the axis of the eye by which they are not ſeen; that is, an object ſituated in the common axis appears to the right eye in the axis of the left, and *vice verſa*. His next propoſition, proved likewiſe by experiments, is, that "objects, ſituated in any line drawn through the mutual interſection of the optic axes to the viſual baſe, do not appear to be in that line, but in another, drawn through the ſame interſection, to a point in the viſual baſe, diſtant half this baſe from the ſimilar extremity of the former line towards the left, if the objects be ſeen by the right eye, but towards the right if ſeen by the left eye." From theſe propoſitions he thus accounts for ſingle viſion by both eyes: "If the queſtion be concerning an object at the concourſe of the optic axes, it is ſeen ſingle, becauſe its two ſimilar appearances, in regard to ſize, ſhape, and colour, are ſeen by both eyes in one and the ſame direction, or, if you will, in two directions, which coincide with each other through the whole of their extent. It therefore matters not whether the diſtance be truly or falſely eſtimated; whether the object be thought to touch our eyes, or to be infinitely remote. And hence we have a reaſon, which no other theory of viſible direction affords, why objects appeared ſingle to the young gentleman mentioned by Cheſelden, immediately after his being couched, and before he could have learned to judge of diſtance by ſight. When two ſimilar objects are placed in the optic axes, one in each, at equal diſtances from the eyes, they will appear in the ſame place, and therefore one, for the ſame reaſon that a truly ſingle object, in the concourſe of the optic axes, is ſeen ſingle. It ſeems only neceſſary to determine, whether the dependence of the viſible direction upon the actions of the muſcles of the eyes be eſtabliſhed by nature, or by cuſtom. But facts are here wanting. As far as they go, however, they ſerve to prove, that it ariſes from an original principle of our conſtitution. For Mr Cheſelden's patient ſaw objects ſingle, and conſequently in the ſame directions with both eyes, immediately after he was couched; and perſons affected with ſquinting from their earlieſt infancy ſee objects in the ſame directions with the eye they have never been accuſtomed to employ, as they do with the other they have conſtantly uſed." This work deſerves to be ſtudied by every optician.

339. Dr JURIN made the following experiments, to determine whether an object ſeen by both eyes appears brighter than when ſeen with one only.

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He laid a ſlip of clean white paper directly before him on a table, and applying the ſide of a book cloſe to his right temple, ſo as that the book was advanced conſiderably more forward than his face, he held it in ſuch a manner, as to hide from his right eye that half of the paper which lay to his left hand, while the left half of the paper was ſeen by both eyes without any impediment. Then looking at the paper with both eyes, he obſerved it to be divided, from the top to the bottom, by a dark line, and the part which was ſeen with one eye only was manifeſtly darker than that which was ſeen with both eyes; and, applying the book to his left temple, he found, by the reſult of the experiment, that both his eyes were of equal goodneſs. He then endeavoured to find to what degree this exceſs of brightneſs amounted; and comparing it with the appearance of an object illuminated partly by one candle and partly by two, he was ſurpriſed to find that an object ſeen with two eyes is by no means twice as luminous as when it is ſeen with one only; and after a number of trials, by which he made the proportion leſs and leſs continually, he found that when one paper was illuminated by a candle placed at the diſtance of three feet, and another paper by the ſame candle at the ſame diſtance, and by another candle at the diſtance of 11 feet, the former ſeen by both eyes, and the latter with one eye only, appeared to be of equal whiteneſs; ſo that an object ſeen with both eyes appears brighter than when it is ſeen with one only, by about a 13th part. He then proceeded to inquire whether an object ſeen with both eyes appears any thing larger than when ſeen with one only; but he concluded that it did not, except on account of ſome particular circumſtances, as in the caſe of the binocular teleſcope and the concave ſpeculum.

340. M. DU TOUR maintains, that the mind attends to no more than the image made in one eye at a time; and produces ſeveral curious experiments in favour of this hypotheſis, which had alſo been maintained by Kepler and almoſt all the firſt opticians. But, as M. Buffon obſerves, it is a ſufficient anſwer to this hypotheſis, how ingeniouſly ſoever it may be ſupported, that we ſee more diſtinctly with two eyes than with one; and that when a round object is near us, we plainly ſee more of the ſurface in one caſe than in the other. There are alſo other facts which clearly prove the contrary of M. du Tour's hypotheſis.

341. With reſpect to ſingle viſion with two eyes, Dr HARTLEY obſerves, that the optic nerves of men, and ſuch other animals as look the ſame way with both eyes, unite in the *cella turcica*, in a ganglion peculiar to themſelves; and that the aſſociations between the ſynchronous impreſſions on the two retinas muſt be made ſooner and cemented ſtronger on this account; alſo that they ought to have a much greater power over one another's images, than in any other part of the body. And thus an impreſſion made on the right eye alone, by a ſingle object, may propagate itſelf into the left, and there raiſe up an image almoſt equal in vividneſs to itſelf; and conſequently when we ſee with one eye only, we may, however, have pictures in both eyes.

342. A curious deception in viſion, ariſing from the uſe of both eyes, was obſerved and accounted for by Dr SMITH. It is a common obſervation, he ſays, that objects ſeen with both eyes appear more vivid and ſtronger than they do to a ſingle eye; eſpecially when both of them are equally good. A perſon not ſhort-ſighted may ſoon be convinced of this fact, by looking attentively at objects that are pretty remote, firſt with one eye, and then with both. This obſervation gave occaſion to the conſtruction of the BINOCULAR TELESCOPE, or teleſcope for both eyes, in the uſe of which the phenomenon is ſtill more ſtriking. There is another remarkable phenomenon obſervable with this inſtrument. In the foci of the two teleſcopes there are two equal rings as uſual, which terminate the pictures of the objects there formed, and conſequently the viſible area of the objects themſelves. Theſe equal rings, by reaſon of the equal eye-glaſſes, appear equal, and equally diſtant, when ſeen ſeparately by each eye; but when they are ſeen with both eyes, they appear much larger, and more diſtant alſo; and the objects ſeen through them do alſo appear much larger, though circumſcribed by their united rings, in the ſame places as when they were ſeen ſeparately. The phenomenon of the enlarged circle of the viſible area in the binocular teleſcope, may be ſeen very plainly in looking at diſtant objects though a pair of ſpectacles, removed from the eyes about 4 or 5 inches, and held ſteady at that diſtance. The two innermoſt of the four apparent rings, which hold the glaſſes, will then appear in one larger and more diſtant ring than the two outermoſt, which will hardly be viſible unleſs the ſpectacles be farther removed.

343. A curious circumſtance, relating to the effect of one eye upon the other, was noticed by M. ÆPINUS, who obſerved, that, when he was looking through a hole made in a plate of metal, about the 10th part of a line in diameter, with his left eye, both the hole itſelf appeared larger, and alſo the field of view ſeen through it was more extended, whenever he ſhut his right eye; and both effects were more remarkable when that eye was covered with his hand. He found conſiderable difficulty in meaſuring this augmentation of the apparent diameter of the hole, and of the field of view; but at length he found, that, when the hole was half an inch, and the tablet which he viewed through it was three feet from his eye, if the diameter of the field when both his eyes were open was 1, it became 1½ when the other eye was ſhut, and nearly 2 when his hand was laid upon it. Upon examining this phenomenon, it appeared to depend upon the enlargement of the pupil of one eye when the other is cloſed, the phyſical or anatomical cauſe of which he did not pretend to aſſign; but he obſerves, that it is wiſely appointed by divine Providence, that when one eye fails, the field of view in the other may be extended. That this effect ſhould be more ſenſible, when the eye is covered with the hand, is owing, he obſerves, to the eye-lids not being impervious to the light. But the enlargement of the pupil does not enlarge the field of view, except in looking through a hole, as in this particular caſe; and therefore perſons who

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who are blind of one eye can derive no advantage from this circumstance.

344. A great deal has been written by Gassendi, Le Clerc, Musschenbroek, and Du Tour, concerning the place to which we refer an object viewed by one or both eyes. But the most satisfactory account of this matter, the reader will find in Dr Wells's Essay above quoted.

Of the APPEARANCE *of* OBJECTS *seen through* MEDIA *of* DIFFERENT FORMS.

345. FOR the more easy apprehension of what relates to this subject, we shall premise the five following particulars, which either have been already mentioned, or follow from what has been before laid down.

346. I. That as each point of an object, when viewed by the naked eye, appears in its proper place, and as that place is always to be found in the line in which the axis of a pencil of rays flowing from it enters the eye, or else in the line which Dr WELLS calls the common axis: we hence acquire an habit of judging the point to be situated in that line: and, because the mind is unacquainted with what refractions the rays suffer before they enter the eye, therefore, in cases where they are diverted from their natural course, by passing through any medium, it judges the point to be in that line produced back, in which the axis of a pencil of rays flowing from it is situated, the instant they enter the eye, and not in that it was in before refraction. We shall therefore, in what follows, suppose the apparent place of an object, when seen through a refracting medium, to be somewhere in that line produced back, in which the axis of a pencil of rays flowing from it proceeds after they have passed through the medium.

347. II. That we are able to judge, though imperfectly, of the distance of an object by the degree of divergency, wherein the rays flowing from the same point of the object enter the pupil of the eye, in cases where that divergency is considerable; but because, in what follows, it will be necessary to suppose an object, when seen through a medium whereby its apparent distance is altered, to appear in some determinate situation, in those cases where the divergency of the rays at their entrance into the eye is considerable, we will suppose the object to appear where those lines which they describe in entering, if produced back, would cross each other: though it must not be asserted, that this is the precise distance; because the brightness, distinctness, and apparent magnitude of the object, on which its apparent distance in some measure depends, will also suffer an alteration by the refraction of the rays in passing through that medium.

348. III. That we estimate the magnitude of an object by that of the optic angle.

349. IV. That vision is the brighter, the greater the number of rays is which enter the pupil. And,

350. V. That, in some cases, the apparent brightness, distinctness, and magnitude of an object, are the only means whereby our judgment is determined in estimating the distance of it.

351. PROP. I. An object placed within a medium terminated by a plane surface on that side which is next the eye, if the medium be denser than that in which the eye is (as we shall always suppose it to be unless where the contrary is expressed), appears nearer to the surface of the medium than it is. Thus, if A be a point of an object placed within the medium BDCE (*fig.* 10. *Pl.* 254.) and *Ab Ac* be two rays proceeding from thence, these rays passing out of a denser into a rarer medium, will be refracted from their respective perpendiculars *b d*, *c e*, and will enter the eye at H, suppose in the directions *bf*, *cg*: let then these lines be produced back till they meet in F: this will be the apparent place of the point A: and because the refracted rays *bf*, *cg* will diverge more than the incident ones *Ab*, *Ac*, it will be nearer to the points *b* and *c* than the point A; and as the same is true of each point in the object, the whole will appear to an eye at H, nearer to the surface BC than it is. Hence when one end of a straight stick is put under water, and the stick is held in an oblique position, it appears bent at the surface of the water; viz. because each point that is under water appears nearer the surface, and consequently higher than it is. Hence also an object at the bottom of a vessel may be seen when the vessel is filled with water, though it be so placed with respect to the eye, that it cannot be seen when the vessel is empty. To explain this, let ABCD (*fig.* 11. *Pl.* 251.) represent a vessel, and let E be an object lying at the bottom of it. This object, when the vessel is empty, will not be seen by an eye at F, because HB, the upper part of the vessel, will obstruct the ray EH; but when it is filled with water to the height GH, the ray EK being refracted at the surface of the water into the line KF, the eye at F shall see the object by means of that.

352. In like manner, an object situated in the horizon appears above its true place, upon account of the refraction of the rays which proceed from it in their passage through the atmosphere of the earth. For, first, if the object be situated beyond the limits of the atmosphere, its rays in entering it will be refracted towards the perpendicular; that is, towards a line drawn from the point where they enter, to the centre of the earth, which is the centre of the atmosphere: and as they pass on, they will be continually refracted the same way, because they are all along entering a denser part, the centre of whose convexity is still the same point; upon which account the line they describe will be a curve bending downwards; and therefore none of the rays that come from that object can enter an eye upon the surface of the earth, except what enter the atmosphere higher than they need to do if they could come in a right line from the object; consequently the object must appear above its proper place. 2dly, if the object be placed within the atmosphere, the case is still the same; for the rays which flow from it must continually enter a denser medium whose centre is below the eye; and therefore being refracted towards the centre, that is downwards as before, those which enter the eye must necessarily proceed as from some point above the object; wherefore the object will appear above its proper place. Hence the sun, moon, and stars, appear above the horizon, when they are just below

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low it; and higher than they ought to do, when they are above it: likewise distant hills, trees, &c. seem to be higher than they are. The lower these objects are in the horizon, the greater is the obliquity with which the rays which flow from them enter the atmosphere, or pass from the rarer into the denser parts of it; and therefore they appear to be the more elevated by refraction; upon which account the lower parts of them are apparently more elevated than the other. This makes their upper and under parts seem nearer than they are; as is evident from the sun and moon, which appear of an oval form when they are in the horizon, their horizontal diameters appearing of the same length they would do if the rays suffered no refraction, while their vertical ones are shortened thereby.

353. PROP. II. An object seen through a medium terminated by plane and parallel surfaces, appears nearer, brighter, and larger, than with the naked eye. For instance, let AB (*Fig.* 13. *Pl.* CCLIII.) be the object, CDEF the medium, and GH the pupil of an eye, which is here drawn large to prevent confusion. And, 1st, Let RK, RL, be two rays proceeding from the point R, and entering the denser medium at K and L; these rays will here by refraction be made to diverge less, and to proceed afterwards, suppose in the lines K*a*, L*b*. At *a* and *b*, where they pass out of the denser medium, they will be as much refracted the contrary way, proceeding in the lines *ac*, *bd*, parallel to their first directions. Produce these lines back till they meet in *e*: this will be the apparent place of the point R; and it is evident from the figure, that it must be nearer the eye than that point; and because the same is true of all other pencils flowing from the object AB, the whole will be seen in the situation *fg*, nearer to the eye than the line AB. 2d, As the rays RK, RL, would not have entered the eye, but have passed by it in the directions K*r*, L*t*, had they not been refracted in passing through the medium, the object appears brighter. 3d, The rays A*b*, B*i*, will be refracted at *b* and *i* into the less converging *bk* and *il*, and at the other surface into *k*M, *l*M, parallel to A*k* and B*i* produced; so that the extremities of the object will appear in the lines M*k* M*l* produced, viz. in *f* and *g*, and under as large an angle *f*M*g*, as the angle A*q*B under which an eye at *q* would have seen it had there been no medium interposed to refract the rays; and therefore it appears larger to the eye at GH, being seen through the interposed medium, than otherwise it would have done. But it is here to be observed, that the nearer the point *e* appears to the eye on account of the refraction of the rays RK, RL, the shorter is the image *f g*, because it is terminated by the lines M*f* and M*g*, upon which account the object is made to appear less; and therefore the apparent magnitude of an object is not much augmented by being seen through a medium of this form. It is evident from the figure, that the effect of a medium of this form depends wholly upon its thickness; for the distance between the lines R*r* and *ec*, and consequently the distance between the points *e* and R, depends upon the length of the line K*a*. Again, the distance between the lines AM and *f*M depends on the length of the line *b k*; but both K*u* and *k b* depend on the length of the line *b k*; but both K*u* and *kb* depend on the distance between the surfaces CE and DF, and therefore the effect of this medium depends upon its thickness.

354. PROP. III. An object seen through a convex lens, appears larger, brighter, and more distant, than with the naked eye. To illustrate this, let AB (*fig.* 14, *pl.* 253.) be the object, CD the lens, and EF the eye. 1. From A and B, the extremities of the object, draw the lines A*Yr*, B*Xr*, crossing each other in the pupil of the eye; the angle A*r*B comprehended between these lines is the angle under which the object would be seen with the naked eye. But by the interposition of a lens of this form, whose property it is to render converging rays more so, the rays AY and BX will be made to cross each other before they reach the pupil. There the eye at E will not perceive the extremities of the object by means of these rays, for they will pass it without entering, but by some others, which must fall without the points Y and X, or between them; but if they fall between them, they will be made to concur sooner than they themselves would have done; and therefore, if the extremities of the object could not be seen by them, it will much less be seen by these. It remains therefore, that the rays which will enter the eye from the points A and B after refraction, must fall upon the lens without the points Y and X; let the rays, then, AO and BP be such. These after refraction entering the eye at *r*, the extremities of the object will be seen in the lines *r*Q *r*T produced, and under the optic angle Q*r* V, which is larger than A*r*B, and therefore the apparent magnitude of the object will be increased. 2. Let GHI be a pencil of rays flowing from the point G; as it is the property of this lens to render diverging rays less diverging, parallel, or converging, it is evident that some of those rays, which would proceed on to F and E, and miss the eye, were they to suffer no refraction in passing through the lens, will now enter it; by which means the object will appear brighter. 3. As to the apparent distance of the object, that will vary according to the situation of it with respect to the focus of parallel rays of the lens. 1. Then, let us suppose the object placed so much nearer the lens than its focus of parallel rays; that the refracted rays KE and LF, though rendered less diverging by passing through it, may yet have a considerable degree of divergency, so that we may be able to form a judgment of the distance of the object thereby; in this case, the object ought to appear where EK FL produced back concur; which, because they diverge less than the rays GH GI, will be beyond G, that is, at a greater distance from the lens than the object is. But because both the brightness and magnitude of the object will at the same time be augmented, prejudice will not permit us to judge it quite so far off as the point where those lines meet, but somewhere between that point and its proper place. 2. Let the object be placed in the focus of parallel rays, then will the rays KE and LF become parallel; and though in this case the object would appear

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appear at an immenſe diſtance, if that diſtance were to be judged of by the direction of the rays KE and LF, yet, upon account of the brightneſs and magnitude of it, we ſhall not think it much farther from us than if it were ſeen by the naked eye. 3. If the object be ſituated beyond the focus of parallel rays, as in BA (*fig.* 5. *pl.* CCLV.) the rays flowing from thence and falling upon the lens CD, will be collected into their reſpective foci at *a* and *b*, and the intermediate points *m*, *n*, &c. and will there form an image of the object AB; and after croſſing each other in the ſeveral points of it, as expreſſed in the figure, will paſs on diverging, as from a real object. Now, if an eye be ſituated at *c*, where A *c*, B *c*, rays proceeding from the extreme points of the object, make not a much larger angle A *c* B than they would do if there were no lens interpoſed, and the rays belonging to the ſame pencil do not converge ſo much as thoſe which the eye would receive if it were placed nearer to *a* or *b*, the object, upon theſe accounts, appearing very little larger or brighter than with the naked eye, is ſeen nearly in its proper place; but if the eye recedes a little way towards *a b*, the object, then appearing both brighter and larger, ſeems to approach the lens; which is an evident proof of what has been ſo often aſſerted, viz. that we judge of the diſtance of an object in ſome meaſure by its brightneſs and magnitude; for the rays converge the more the farther the eye recedes from the lens; and therefore, if we judge of the diſtance of the object by the direction of the rays which flow from it, we ought in this caſe to conceive it at a greater diſtance than when the rays were parallel, or diverged at their entrance into the eye.

355. That the object ſhould ſeem to approach the lens in this caſe, was a difficulty that exceedingly puzzled the learned BARROW, and which he pronounces inſuperable, and not to be accounted for by any theory we have of viſion. M. MOLINEUX alſo leaves it to the ſolution of others, as that which will be inexplicable, till a more intimate knowledge of the *viſive faculty* be obtained by mortals. They imagined, that ſeeing an object appears farther off, the leſs the rays diverge which fall upon the eye, if they ſhould proceed parallel to each other, it ought to appear exceeding remote; and if they ſhould converge, it ſhould then appear more diſtant ſtill; the reaſon of this was, becauſe they looked upon the apparent place of an object, as owing only to the direction of the rays wherever it was, and not at all to its apparent magnitude or ſplendour. Perhaps it may proceed from our judging of the diſtance of an object in ſome meaſure by its magnitude, that that deception of ſight commonly obſerved by travellers may ariſe; viz. that upon the firſt appearance of a building larger than uſual, as a cathedral church or the like, it generally ſeems nearer to them than they afterwards find it to be.

356. PROB. IV. If an object be placed farther from a convex lens than its focus of parallel rays, and the eye be ſituated farther from it on the other ſide than the place where the rays of the ſeveral pencils are collected into their reſpective foci, the object appears inverted, and pendulous in the air, between the eye and the lens. To explain this, let AB (*Fig.* 5. *Pl.* CCLV.) repreſent the object, CD the lens; and let the rays of the pencil ACD be collected in *a*, and thoſe of BCD in *b*, forming there an inverted image of the object AB, and let the eye be placed in F; it is apparent from the figure, that ſome of the refracted rays, which paſs through each point of the image, will enter the eye as from a real object in that place; and therefore the object AB will appear there, as the propoſition aſſerts. But we are ſo little accuſtomed to ſee objects in this manner, that it is very difficult to perceive the image with one eye; but if both eyes are ſituated in ſuch a manner, that rays flowing from each point of the image may enter both, as at G and H, and we direct our optic axes to the image, it is eaſy to be perceived. If the eye be ſituated in *a* or *b*, or very near them on either ſide, the object appears exceedingly confuſed; viz. if at *d*, the rays which proceed from the ſame point of the object converge ſo very much, and if at *e*, they diverge ſo much, that they cannot be collected together upon the retina, but fall upon it as if they were the axes of ſo many diſtinct pencils coming through every point of the lens; wherefore little more than one ſingle point of the object is ſeen at a time, and that appears all over the lens; from whence nothing but confuſion ariſes. If the lens be ſo large that both eyes may be applied to it, as in *h* and *k*, the object will appear double; for it is evident from the figure, that the rays which enter the eye at *h* from either extremity of the object A or B, do not proceed as from the ſame point with that from whence thoſe which enter the other at *k* ſeem to flow; the mind therefore is here deceived, and looks upon the object as ſituated in two different places, and therefore judges it to be double.

357. PROP. V. An object ſeen through a concave lens appears nearer, ſmaller, and leſs bright, than with the naked eye. Thus, let AB (*fig.* 17. *pl.* CCLII.) be the object, CD the pupil of an eye, and EF the lens. Now, as it is the property of a lens of this form to render diverging rays more ſo, and converging ones leſs ſo, the diverging rays GH, GI, proceeding from the point G, will be made to diverge more, and ſo to enter the eye as from ſome nearer point *g*; and the rays AH, BI, which converge, will be made to converge leſs, and to enter the eye as from the points *a* and *b*; wherefore the objects will appear in the ſituation *a g b*, leſs and nearer than without the lens. Farther, as the rays which proceed from G are rendered more diverging, ſome of them will be made to paſs by the pupil of the eye, which otherwiſe would have entered it, and therefore each point of the object will appear leſs bright.

358. PROP. VI. An object ſeen through a polygonous glaſs, that is, ſuch as is terminated by ſeveral plain ſurfaces, is multiplied thereby. For inſtance, let A (*fig.* 11. *pl.* CCLIV.) be an object, and BC a polygonous glaſs, terminated by the plain ſurfaces BD, DE, &c. and let the ſituation of the eye F be ſuch, that the rays AB, being refracted in paſſing through the glaſs, may enter it in the direction BF, and the rays AC in the direction CF. Then will the eye, by means of the former, ſee the object in G, and by the latter in H;

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and by means of the rays AI, the object will appear also in its proper situation A.

SECT. IV. *Of the* REFLECTION *of* LIGHT.

359. WHEN a ray of light falls upon any body, however transparent, the whole of it never passes through the body, but some part is always driven back or reflected from it; and it is by this reflected light that all bodies which have no light of their own become visible to us. Of that part of the ray which enters, another part is also reflected from the second surface, or that which is farthest from the luminous body. When this part arrives again at the first surface, part of it is reflected back from that surface; and thus it continues to be reflected between the two surfaces, and to pass backwards and forwards within the substance of the medium, till some part is totally extinguished and lost. Besides this inconsiderable quantity, however, which is lost in this manner, the second surface often reflects much more than the first; insomuch, that, in certain positions, scarce any rays will pass through both sides of the medium. A very considerable quantity is also unaccountably lost or extinguished at each reflecting surface; insomuch, that no body, however transparent, can transmit all the rays which fall upon it; neither, though it be ever so well fitted for reflection, will it reflect them all.

§ 1. *Of the* CAUSE *of* REFLECTION.

360. THE reflection of light is by no means so easily accounted for as the refraction of the same fluid. This last may be accounted for in a satisfactory manner, by the supposition of an attractive power diffused throughout the medium, and extending a very little way beyond it; but with regard to the reflection of light, there seems to be no satisfactory hypothesis hitherto invented. Of the principal opinions on this subject, Mr ROWNING hath given the following account.

361. I. It was the opinion of philosophers, before Sir Isaac Newton discovered the contrary, that light is reflected by impinging upon the solid parts of bodies. But that it is not so, is clear for the following reasons: 1st, It is not reflected at the first surface of a body by impinging against it; for, in order to the due and regular reflection of light, that is, that the reflected rays should not be dispersed and scattered one from another, there ought to be no rasures or unevenness in the reflecting surface large enough to bear a sensible proportion to the magnitude of a ray of light; because, if the surface abounds with such, the reflected rays will rather be scattered like a parcel of pebbles thrown upon a rough pavement, than reflected with that regularity with which light is observed to be from a well-polished surface. Now those surfaces, which to our senses appear perfectly smooth and well polished, are far from being so; for to polish is no other than to grind off the larger eminences and protuberances of the metal with the rough and sharp particles of sand, emery, or putty, which must of necessity leave behind them an infinity of rasures and scratches, which, though inconsiderable with regard to the former roughnesses, and too minute to be discerned by us, must nevertheless bear a large proportion to, if not vastly exceed, the magnitude of the particles of light. 2dly, It is not reflected at the second surface by impinging against any solid particles. That it is not reflected by impinging upon the solid particles which constitute this second surface, is sufficiently clear from the foregoing argument; the second surfaces of bodies being as incapable of a perfect polish as the first; and it is farther confirmed from hence, viz. that the quantity of light reflected differs according to the different density of the medium behind the body; and that it is not reflected by impinging upon the particles which constitute the surface of the medium behind it, is evident, because the strongest reflection of all, at the second surface of a body, is when there is a vacuum behind it.

362. II. It has been thought, that it is reflected at the first surface of a body, by a repulsive force equally diffused over it; and at the second, by an attractive force. 1. If there be a repulsive force diffused over the surface of bodies that repels rays of light at all times, then, since by increasing the obliquity of a ray we diminish its perpendicular force (which is that only whereby it must make its way through this repulsive force), however weakly that force may be supposed to act, rays of light may be made to fall with so great a degree of obliquity on the reflecting surface, that there shall be a total reflection of them there, and not one particle of light be able to make its way through, which is contrary to observation; the reflection of light at the first surface of a transparent body being never total to any obliquity whatever. The hypothesis therefore in this particular must be false. 2. As to the reflection at the 2d surface by the attractive force of the body, this may be considered in two respects: 1st, When it is total; 2d, When it is partial. 1st, In cases where the reflection is total, the cause is undoubtedly that same attractive force by which light would be refracted in passing out of the same body. This is manifest from that analogy which is observable between the reflection of light at this second surface, and its refraction there. For otherwise, what can be the reason that the total reflection should begin just when the obliquity of the incident ray, at its arrival at the 2d surface, is such that the refracted angle ought to be a right one; or when the ray, were it not to return in reflection, ought to pass on parallel to the surface, without going from it? For in this case it is evident, that it ought to be returned by this very power, and in such manner, that the angle of reflection shall be equal to the angle of incidence. But, 2dly, as to the reflection at the second surface, when it is partial, an attractive force, uniformly spread over it, can never be the cause thereof. Because it is inconceivable that the same force, acting in the same circumstances in every respect, can sometimes reflect the violet coloured rays, and transmit the red, and at other times reflect the red, and transmit the violet. But this objection is not valid; for in each colour, the reflection takes place at that angle, and no other, where the refraction of *that* ray would make it parallel to the posterior surface.

363. This partial reflection and refraction is a great difficulty in all the attempts which have been made to give a mechanical explanation of the

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the phenomena of optics. It is equally a deſideratum in that explanation which was propoſed by HUYGENS, and, ſince his time revived by EULER, by means of the undulations of an elaſtic fluid, although a vague conſideration of undulatory motions ſeems to offer a very ſpecious analogy. But a *rigid* application of ſuch *knowledge* as we have acquired of ſuch motions, will convince any unprejudiced mathematician, that the phenomena of undulation are eſſentially diſſimilar to the phenomena of light. The inflection of light, and its refraction, equally demonſtrate that light *is acted on* by moving forces in a direction perpendicular to the ſurface; and it is equally demonſtrable that ſuch forces muſt, in proper circumſtances, produce reflections preciſely ſuch as we obſerve. The only difficulty is to ſhow how there can be forces which produce both reflection and refraction, in circumſtances which are ſimilar. The fact is, that ſuch effects are produced; the firſt logical inference, is, that, with reſpect to the light which is reflected, and that which is refracted, the circumſtances are *not* ſimilar; and our attention ſhould be directed to the diſcovery of that diſſimilarity. All the phenomena of combined reflection and refraction ſhould be examined and claſſed according to their generality, not doubting but that theſe points of reſemblance will lead to the diſcovery of their cauſes. Now the experiments of Mr Bouguer ſhow, that bodies differ extremely in their powers of thus ſeparating light by reflection and refraction, ſome of them reflecting much more at a given angle than others. It is not therefore *a general property of light* to be partly reflected and partly refracted, but a *diſtinctive* property of *different* bodies: and ſince we ſee that they poſſeſs it in *different* degrees, we are authoriſed to conclude that ſome bodies *may want it altogether*. We may therefore expect ſome ſucceſs by conſidering how bodies are affected by light, as well as how light is affected by bodies. Now, in all the phenomena of the material world we find bodies connected by mutual forces. We know no caſe where a body A tends towards a body B, or, in common language, is attracted by it, without, at the ſame time, the body B tending towards A. This is obſerved in the phenomena of magnetiſm, electricity, gravitation, corpuſcular attraction, impulſe, &c. We ſhould therefore conclude from analogy, that as bodies change the motion of light, light alſo changes the motion of bodies; and that the particles near the ſurface are put into vibration by the paſſage of light through among them.

364. It is clearly underſtood, that in all motions of vibration, ſuch as the motions of pendulums, there is a moment when the body is in its natural ſituation, as when the pendulum is in the vertical line. This *may* happen in the ſame inſtant in each atom of the tranſparent body. The particles of light which *then* come within the ſphere of action may be wholly reflected; in the next moment, particles of light in the very ſituation of the firſt may be refracted. Then will ariſe a ſeparation of light; and as this will depend on the manner in which the particles of bodies are agitated by it during its paſſage, and as this again will depend on the nature of the body, that is on the law of action of thoſe forces which connect the particles with each other, and with the particles of light, it will be different in different bodies. But in all bodies there will be this general reſemblance, that the ſeparation will be moſt copious in great obliquities of incidence, which gives the repulſive forces more time for action, while it diminiſhes the perpendicular force of the light. Such a reſemblance between the phenomena and the legitimate conſequences of the aſſumption, (the agitation of the parts of the body), gives us ſome authority for aſſigning this as the cauſe; nor can the aſſumption be called *gratuitous*. To ſuppoſe that the particles of the tranſparent body are *not thus agitated*, would be a moſt gratuitous contradiction of a law of nature to which we know no other exception. Thus the objection raiſed in § 255. is obviated, becauſe the reflection and refraction are not here conceived as ſimultaneous, but as exceſſive.

365. III. Some, being apprehenſive of the inſufficiency of a repulſive and attractive force diffuſed over the ſurfaces of bodies, and acting uniformly, have ſuppoſed, that, by the action of light upon the ſurface of bodies, the matter of theſe bodies is put into an undulatory motion; and that where the ſurface of it is ſubſiding, light is tranſmitted, and in thoſe places where it is riſing, light is reflected. But to overlook the objections which we have juſt made to this theory of undulation, we have only to obſerve, that, were it admitted, it ſeems not to advance us one jot farther; for in thoſe caſes, ſuppoſe where red is reflected, and violet tranſmitted, how comes it to paſs that the red impinges only on thoſe parts when the waves are riſing, and the violet when they are ſubſiding?

366. IV. The next hypotheſis to be taken notice of, is that remarkable one of Sir Iſaac Newton's, *fits of eaſy reflection and tranſmiſſion*, which we ſhall now explain and examine. That author is of opinion, that light, in its paſſage from the luminous body, is diſpoſed to be alternately reflected by and tranſmitted through any refracting ſurface it may meet with; that theſe diſpoſitions (which he calls *fits of eaſy reflection and eaſy tranſmiſſion*) return ſucceſſively at equal intervals; and that they are communicated to it at its firſt emiſſion out of the luminous body it proceeds from, probably by ſome very ſubtile and elaſtic ſubſtance diffuſed through the univerſe, in the following manner: As bodies falling into water, or paſſing through the air, cauſe undulations in each, ſo the rays of light may excite vibrations in this elaſtic ſubſtance; the quickneſs of which vibrations depending on the elaſticity of the medium, (as the quickneſs of the vibrations in the air, which propagate ſound, depend ſolely on the elaſticity of the air, and not upon the quickneſs of thoſe in the ſounding body), the motion of the particles of it may be quicker than that of the rays: and therefore, when a ray, at the inſtant it impinges upon any ſurface, is in that part of a vibration of this elaſtic ſubſtance which conſpires with its motion, it may be eaſily tranſmitted; and when it is in that part of a vibration which is contrary to its motion, it may be reflected. He farther ſuppoſes, that when light falls upon the ſurface of a body,

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if it be not in a fit of eaſy tranſmiſſion, every ray is there put into one, ſo that when they come at the other ſide, (for this elaſtic ſubſtance, eaſily pervading the pores of bodies, is capable of the ſame vibrations within the body as without it), the rays of one colour ſhall be in a fit of eaſy tranſmiſſion, and thoſe of another in a fit of eaſy reflection, according to the thickneſs of the body, the intervals of the fits being different in rays of a different kind. This ſeems to account for the different colours of the bubble and thin plate of air and water, as is obvious, and likewiſe for the reflection of light at the ſecond ſurface of a thicker body; for the light reflected from thence is alſo obſerved to be coloured, and to form rings according to the different thickneſs of the body, when not intermixed and confounded with other light, as will appear from the following experiment. If a piece of glaſs be ground concave on one ſide, and convex on the other, both its concavity and convexity having one common centre; and if a ray of light be made to paſs through a ſmall hole in a piece of paper held in that common centre, and be permitted to fall on the glaſs; beſides thoſe rays which are regularly reflected back to the hole again, there will be others reflected to the paper, and form coloured rings ſurrounding the hole, not unlike thoſe occaſioned by the reflection of light from thin plates.

367. It is with reluctance, that we venture to call in queſtion any doctrine of Newton; but to his theory of reflection there is this inſuperable objection, that it explains nothing, unleſs the *cauſe* of the fits of more eaſy reflection and tranſmiſſion be held as legitimate; namely, that *they are produced by the undulations of another elaſtic fluid, incomparably more ſubtile than light*, acting upon it in the way of impulſe. The fits themſelves are *matters of fact*, and no way different from what we have endeavoured to account for; but to admit this theory of them, would be to tranſgreſs every rule of philoſophizing, as we have ſhown them to be ſuſceptible of explanation from acknowledged optical laws.

§ 2. *Of the* LAWS of REFLECTION.

368. THE fundamental law of the reflection of light, is, that in all caſes the angle of reflection is equal to the angle of incidence. This is found by experiment to be the caſe, and, beſides, may be demonſtrated mathematically from the laws of percuſſion in bodies perfectly elaſtic. The axiom therefore holds good in every caſe of reflection, whether it be from plane ſurfaces or ſpherical ones, and whether they are convex or concave; and hence the 7 following propoſitions, relating to the reflection of light from plane and ſpherical ſurfaces, may be deduced:

369. I. Rays of light reflected from a plane ſurface have the ſame degree of inclination to one another that their reſpective incident ones have.—For the angle of reflection of each ray being equal to that of its reſpective incident one, it is evident, that each reflected ray will have the ſame degree of inclination to that portion of the ſurface from whence it is reflected, that its incident one has: but it is here ſuppoſed, that all thoſe portions of ſurface from whence the rays are reflected, are ſituated in the ſame plane; conſequently the reflected rays will have the ſame degree of inclination to each other that their incident ones have, from whatever part of the ſurface they are reflected.

370. II. Parallel rays reflected from a concave ſurface are rendered converging.—To illuſtrate this, let AF. CD, EB, (*fig.* 6. *Pl.* CCLV.) repreſent 3 parallel rays falling upon the concave ſurface FB, whoſe centre is C. To the points F and B draw the lines CF, CB; theſe, being drawn from the centre, will be perpendicular to the ſurface at thoſe points. The incident ray CD, alſo paſſing through the centre, will be perpendicular to the ſurface, and therefore will return after reflection in the ſame line; but the oblique rays AF and EB will be reflected into the lines FM and BM, ſituated on the contrary ſide of their reſpective perpendiculars CF and CB. They will therefore proceed converging, after reflection towards ſome point, as M, in the line CD.

371. III. Converging rays, falling on the like ſurface, are made to converge more.—For, every thing remaining as above, let GF, HB, be the incident rays. Now, becauſe theſe rays have larger angles of incidence than the parallel ones AF and EB in the foregoing caſe, their angles of reflection will alſo be larger than thoſe of the others: they will therefore converge after reflection, ſuppoſe in the lines FN and BN, having their point of concourſe N farther from the point C than M, that to which the parallel rays AF and EB converged in the foregoing caſe; and their preciſe degree of convergency will be greater than that wherein they converged before reflection.

372. IV. Diverging rays falling upon the like ſurface, are, after reflection, parallel, diverging, or converging. If they diverge from the focus of parallel rays, they then become parallel; if from a point nearer to the ſurface than that, they will diverge, but in a leſs degree than before reflection; if from a point between that and the centre, they will converge after reflection, and that to ſome point on the contrary ſide of the centre, but ſituated farther from it than the point from which they diverged. If the incident rays diverge from a point beyond the centre, the reflected ones will converge to one on the other ſide of it, but nearer to it than the point they diverged from; and if they diverge from the centre, they will be reflected thither again. 1. Let them diverge in the lines MF, MB, proceeding from M, the focus of parallel rays; then, as the parallel rays AF and EB were reflected into the lines FM and BM (by Prop. II.), theſe rays will now on the contrary be reflected into them. 2. Let them diverge from N, a point nearer to the ſurface than the focus of parallel rays, they will then be reflected into the diverging lines FG and BH, which the incident rays GF and HB deſcribed, that were ſhewn to be reflected into them in the foregoing propoſition; but the degree wherein they diverge will be leſs than that wherein they diverged before reflection. 3. Let them proceed diverging from X, a point between the focus of parallel rays and the centre; they then make leſs angles of incidence than the rays MF and MB, which

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which became parallel by reflection: they will consequently have leſs angles of reflection, and proceed therefore converging towards ſome point, as Y; which point will always fall on the contrary ſide of the centre, becauſe a reflected ray always falls on the contrary ſide of the perpendicular, with reſpect to that on which its incident one falls; and of conſequence it will be farther diſtant from the centre than X. 4. If the incident ones diverge from Y, they will, after reflection, converge to X; thoſe which were the incident rays in the former caſe being the reflected ones in this And laſtly, 5. If the incident rays proceed from the centre, they fall in with their reſpective perpendiculars; and for that reaſon are reflected thither again.

373. V. Parallel rays reflected from a convex ſurface are rendered diverging.—For, let AB, GD, EF, (*fig.* 7. *Pl.* CCLV.) be three parallel rays falling upon the convex ſurface BF, whoſe centre of convexity is C, and let one of them, viz. GD, be perpendicular to the ſurface. Through B, D, and F, the points of reflection, draw the lines CV, CG, and CT; which, becauſe they paſs through the centre, will be perpendicular to the ſurface at theſe points. The incident ray GD, being perpendicular to the ſurface, will return, after reflection, in the ſame line, but the oblique ones AB and EF, in the lines BK and FL, ſituated on the contrary ſide of their reſpective perpendiculars BV and FT. They will therefore diverge, after reflection, as from ſome point M in the line GD produced; and this point will be in the middle between D and C.

374. VI. Diverging rays reflected from the like ſurface are rendered more diverging.—For, every thing remaining as above, let GB, GF, be the incident rays. Theſe having larger angles of incidence than the parallel ones AB and EF in the preceding caſe, their angles of reflection will alſo be larger than theirs; they will therefore diverge after reflection, ſuppoſe in the lines BP and FQ, as from ſome point N, farther from C than the point M; and the degree wherein they will diverge will be greater than that wherein they diverged before reflection.

375. VII. Converging rays, reflected from the like ſurface, are parallel, converging, or diverging. If they tend towards the focus of parallel rays, they then become parallel; if to a point nearer the ſurface than that, they converge, but in a leſs degree than before reflection; if to a point between that and the centre, they will diverge after reflection, as from ſome point on the contrary ſide of the centre, but ſituated farther from it than the point they converged to. If the incident rays converge to a point beyond the centre, the reflected ones will diverge as from one on the contrary ſide of it, but nearer to it than the point to which the incident ones converged; and if the incident rays converge towards the centre, the reflected ones will proceed as from thence. 1. Let them converge in the lines KB and LF, tending towards M, the focus of parallel rays; then, as the parallel rays AB, EF were reflected into the lines BK and FL, (by Prop. V.) thoſe rays will now on the contrary be reflected into them. 2. Let them converge in the lines PB, QF, tending towards N, a point nearer the ſurface than the focus of parallel rays, they will then be reflected into the converging lines BG and FG, in which the rays GB, GF proceeded, that were ſhown to be reflected into them by the laſt propoſition; but the degree wherein they will converge will be leſs than that wherein they converged before reflection. 3. Let them converge in the lines RB and SF proceeding towards X, a point between the focus of parallel rays and the centre; their angles of incidence will then be leſs than thoſe of the rays KB and LF, which became parallel after reflection: their angles of reflection will therefore be leſs; on which account they muſt neceſſarily diverge, ſuppoſe in the lines BH and FI, from ſome point, as Y; which point (by Prop. IV.) will fall on the contrary ſide of the centre with reſpect to X, and will be farther from it than that. 4 If the incident ray tend towards Y, the reflected ones will diverge as from X; thoſe which were the incident ones in one caſe being the reflected ones in the other. 5. Laſtly, if the incident rays converge towards the centre, they fall in with their reſpective perpendiculars; on which account they proceed after reflection as from the centre.

376. In ſome caſes there is a very great reflection from the ſecond ſurface of a tranſparent body The degree of inclination neceſſary to cauſe a total reflection of a ray at the ſecond ſurface of a medium, is that which requires that the refracted angle (ſuppoſing the ray to paſs out there) ſhould be equal to or greater than a right one; and conſequently it depends on the refractive power of the medium through which the ray paſſes, and is therefore different in different media. When a ray paſſes through glaſs ſurrounded with air, and is inclined to its ſecond ſurface under an angle of 42° or more, it will be wholly reflected there. For, as 11 is to 17 (the ratio of refraction out of glaſs into air), ſo is the line of an angle of 42° to a 4th number that will exceed the line of a right angle. Hence it follows, that when a ray of light arrives at the 2d ſurface of a tranſparent ſubſtance, with as great or a greater degree of obliquity than that which is neceſſary to make a total reflection, it will there be all returned back to the firſt: and if it proceeds towards that with as great an obliquity as it did towards the other, (which it will do if the ſurfaces of the medium be parallel to each other), it will there be all reflected again, &c. and will therefore never get out, but paſs from ſide to ſide, till it be wholly ſuffocated and loſt within the body.—Hence ariſes an inquiry, how it happens, that light falling very obliquely upon a glaſs window from without, ſhould be tranſmitted into the room? In anſwer, it muſt be conſidered, that however obliquely a ray falls upon the ſurface of any medium whoſe ſides are parallel, (as thoſe of the glaſs in a window are), it will ſuffer ſuch a degree of refraction in entering there, that it ſhall fall upon the ſecond with a leſs obliquity than that which is neceſſary to cauſe a total reflection. For inſtance, let the medium be glaſs, as ſuppoſed in the preſent caſe: then, as 17 is to 11, (the ratio of refraction out of air into glaſs), ſo is the ſine

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or the largeſt angle of incidence with which a ray can fall upon any ſurface, to the ſine of a leſs angle than that of total reflection. And therefore, if the ſides of the glaſs be parallel, the obliquity with which a ray falls upon the firſt ſurface cannot be ſo great but that it ſhall paſs the ſecond without ſuffering a total reflection there. When light paſſes out of a denſer into a rarer medium, the nearer the ſecond medium approaches the firſt in denſity (or, more properly, in its refractive power), the leſs of it will be refracted in paſſing from one to the other; and when their refracting powers are equal, all of it will paſs into the ſecond medium. The above propoſitions may be all mathematically demonſtrated in the following manner:

377. Prob. I. Of the reflection of rays from a plane ſurface. "When rays fall upon a plane ſurface, if they diverge, the focus of the reflected rays will be at the ſame diſtance behind the ſurface that the radiant point is before it: if they converge, it will be at the ſame diſtance before the ſurface that the imaginary focus of the incident rays is behind it." This propoſition admits of two caſes.

378 Case. 1. Of diverging rays. *Demonſtration.* Let AB, AC, (*fig.* 8. *Pl.* CCLV.) be two diverging rays incident on the plane ſurface DE, the one perpendicularly, the other obliquely: the perpendicular one AB will be reflected to A proceeding as from ſome point in the line AB produced; the oblique one AC will be reflected into ſome line as CF, ſuch that the point G, where the line FG produced interſects the line AB produced alſo, ſhall be at an equal diſtance from the ſurface DE with the radiant A. For the perpendicular CH being drawn, ACH and HCF will be the angles of incidence and reflection; which being equal, their complements ACB and FCE are ſo too; but the angle BCG is equal to FCE, as being vertical to it: therefore in the triangles ABC and GBC the angles at C are equal, the ſide BC is common, and the angles at B are alſo equal to each other, as being right ones; therefore the lines AB and BG, which reſpect the equal angles at C, are alſo equal; and conſequently the point G, the focus of the incident rays AB, AC, is at the ſame diſtance behind the ſurface, that the point A is before it. *Q. E. D.*

379 Case 2. Of converging rays. This is the converſe of the former caſe. For ſuppoſing FC and AB to be two converging incident rays, CA and BA will be the reflected ones (the angles of incidence in the former caſe being now the angles of reflection, and *vice verſa*), having the point A for their focus: but this, from what was demonſtrated above, is at an equal diſtance from the reflecting ſurface with the point G, which in this caſe is the imaginary focus of the incident rays FC and AB. Obs. It is not here, as in the refraction of rays in paſſing through a plane ſurface, where ſome of the refracted rays proceed as from one point, and ſome as from another: but they all proceed after reflection as from one and the ſame point, however obliquely they may fall upon the ſurface; for what is here demonſtrated of the ray AC holds equally of any other, as AL, AK, &c. The caſe of parallel rays incident on a plane ſurface is included in this propoſition; for in that caſe we are to ſuppoſe the radiant to be at an infinite diſtance from the ſurface, and then by the propoſition the focus of the reflected rays will be ſo too; that is, the rays will be parallel after reflection, as they were before.

380. Prop. II. Of the reflection of parallel rays from a ſpherical ſurface. "When parallel rays are incident upon a ſpherical ſurface, the focus of the reflected rays will be the middle point between the centre of convexity and the ſurface." This propoſition admits of two caſes:

381. Case 1. Of parallel rays falling upon a convex ſurface. Dem. Let AB, DH, (*fig.* 9. *Pl.* 255.) repreſent two parallel rays incident on the convex ſurface BH, the one perpendicularly, the other obliquely; and let C be the centre of convexity; ſuppoſe HE to be the reflected ray of the oblique incident one DH proceeding as from E, a point in the line AB produced. Through the point H draw the line CI, which will be perpendicular to the ſurface at that point; and the angles DHI and IHE, being the angles of incidence and reflection, will be equal. To the former of theſe, the angle HCF is equal, the lines AC and DH being parallel; and to the latter the angle CHF, as being vertical; wherefore the triangle CFH is iſoſceles, and conſequently the ſides CF and FH are equal; but ſuppoſing BH to vaniſh, FH is equal to FB; and therefore, upon this ſuppoſition, FC and FB are equal, that is, the focus of the reflected rays is the middle point between the centre of convexity and the ſurface. *Q. E. D.*

382. Case 2. Of parallel rays falling upon a concave ſurface. Dem. Let AB, DH, (*fig.* 10. *pl* CCLV.) be two parallel rays incident, the one perpendicularly, the other obliquely, on the concave ſurface BH, whoſe centre of concavity is C. Let BF and HF be the reflected rays meeting each other in F; this will be the middle point between B and C. For drawing through C the perpendicular CH, the angles DHC and FHC, being the angles of incidence and reflection, will be equal, to the former of which the angle HCF is equal, as alternate; and therefore the triangle CFH is iſoſceles. Wherefore CF and FH are equal: but if we ſuppoſe BH to vaniſh, FB and FH are alſo equal, and therefore CF is equal to FB; that is, the focal diſtance of the reflected rays is the middle point between the centre and the ſurface. *Q. E. D.* Obs. It is here obſervable, that the farther the line DH, either in *fig.* 9. or 10. is taken from AB the nearer the point F falls to the ſurface. For the farther the point H recedes from B, the larger the triangle CFH will become; and conſequently, ſince it is always an iſoſceles one, and the baſis CH, being the radius, is every where of the ſame length, the equal legs BF and FH will lengthen; but CF cannot grow longer unleſs the point F approach towards the ſurface. And the farther H is removed from B, the faſter F approaches to it. This is the reaſon, that whenever parallel rays are conſidered as reflected from a ſpherical ſurface, the diſtance of the oblique one from the perpendicular one is taken ſo ſmall with reſpect to the focal diſtance of that ſurface, that without any phyſical error it may be ſuppoſed

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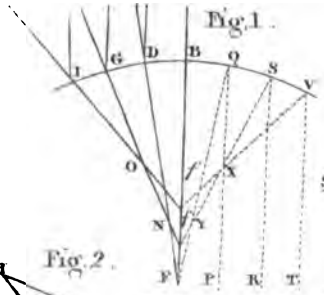
Fig. 1.



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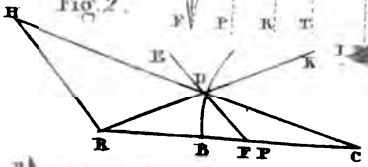

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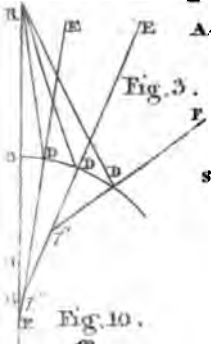

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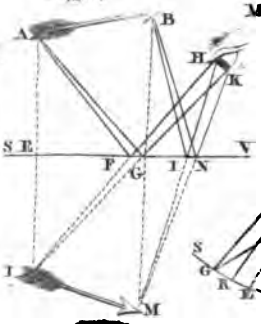

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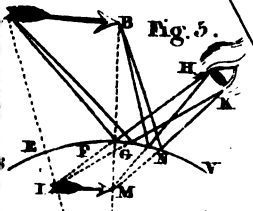

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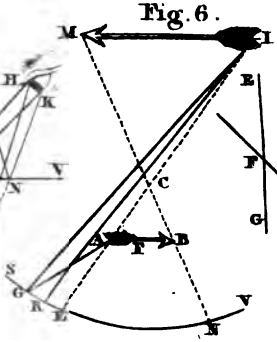

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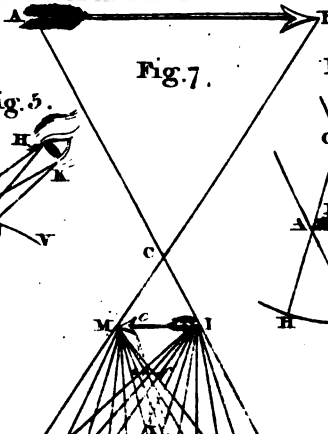

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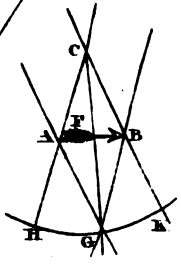

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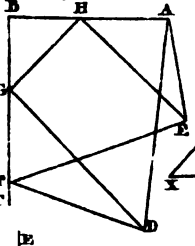

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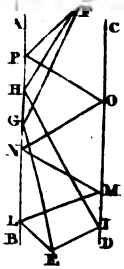

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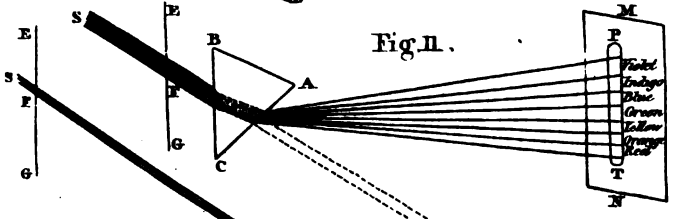

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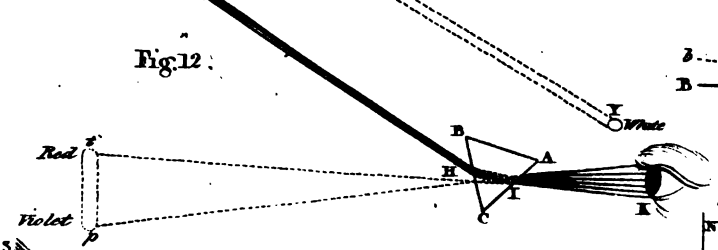

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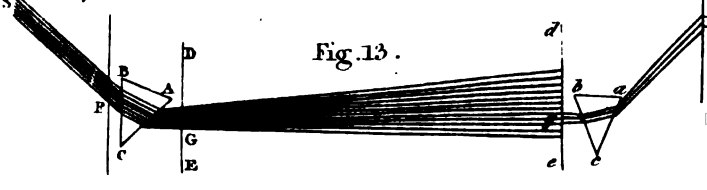

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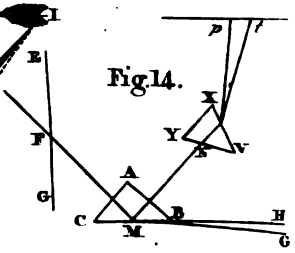

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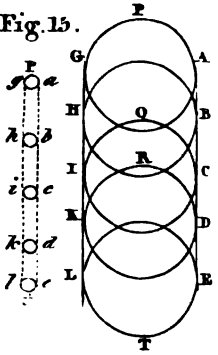

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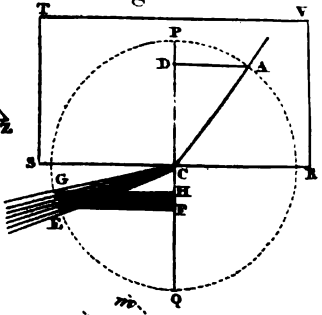

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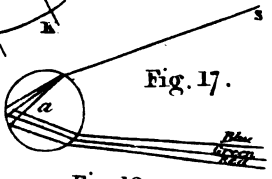

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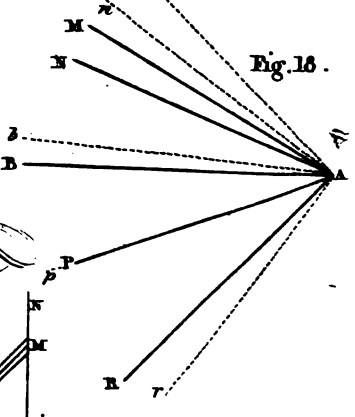

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fed to vanish. Hence it follows, that if a number of parallel rays, as AB, CD, EG, &c. fall upon a convex ſurface, (as *fig.* 1. *Pl.* CCLVI.) and if BA, DK, the reflected rays of the incident ones AB, CD, proceed as from the point F, thoſe of the incident ones CD, EG, viz. DK, GL, will proceed as from N, thoſe of the incident ones ED. HI, as from O, &c. becauſe the farther the incident ones CD, EG, &c. are from AB, the nearer to the ſurface are the points F, *f*, *f*, in the line BF, from which they proceed after reflection; ſo that properly the foci of the reflected rays BA, DK, GL, &c. are not in the line AB produced, but in a curve line paſſing through the points F, N, O, &c. The ſame is applicable to the caſe of parallel rays reflected from the concave ſurface, as expreſſed by the pricked lines on the other half of the figure, where PQ, RS, TV, are the incident rays; QF, S*f*, V*f*, the reflected ones, interſecting each other in the points X, Y, and F; ſo that the foci of thoſe rays are not in the line FB, but in a curve paſſing through thoſe points. Had the ſurface BH in *fig* 9, or 10, *Pl.* CCLV. been formed by the revolution of a parabola about its axis, having its focus in the point F, all the rays reflected from the convex ſurface would have proceeded as from the point F, and thoſe reflected from the concave would have fallen upon it, however diſtant their incident ones AB, DH, might have been from each other. For in the parabola, all lines, drawn parallel to the axis, make angles with the tangents to the points where they cut the parabola (that is, with the ſurface of the parabola) equal to thoſe which are made with the ſame tangents by lines drawn from thence to the focus; therefore, if the incident rays deſcribe thoſe parallel lines, the reflected ones will neceſſarily deſcribe theſe other, and ſo will all proceed as from, or meet in, the ſame point.

383. PROP. III. Of the reflection of diverging and converging rays from a ſpherical ſurface. "When rays fall upon any ſpherical ſurface, if they diverge, the diſtance of the focus of the reflected rays from the ſurface is to the diſtance of the radiant point from the ſame (or, if they converge, to that of the imaginary focus of the incident rays), as the diſtance of the focus of the reflected rays from the centre is to the diſtance of the radiant point (or imaginary focus of the incident rays) from the ſame." This propoſition admits of ten caſes.

384. CASE 1. Of diverging rays falling upon a convex ſurface. DEM. Let RB, RD (*Pl.* CCLVI. *fig.* 2.) repreſent two diverging rays flowing from the point R, as from a radiant, and falling, the one perpendicularly, the other obliquely, on the convex ſurface BD, whoſe centre is C. Let DE be the reflected ray of the incident one RD, produce ED to F, and through R draw the line RH parallel to FE, till it meets CD produced in H. Then will the angle RHD be equal to EDH the angle of reflection, as being alternate to it, and therefore equal alſo to RDH which is the angle of incidence; wherefore the triangle DRH is iſoſceles, and conſequently DR is equal to RH. Now the lines FD and RH being parallel, the triangles FDC and RHC are ſimilar, (or, to expreſs it in Euclid's way, the ſides of the triangle RHC are cut proportionably, 2 Elem. 6.): and therefore FD is to RH, or its equal RD, as CF to CR; but BD vaniſhing, FD and RD differ not from FB and RB: wherefore FB is to RB alſo, as CF to CR; that is, the diſtance of the focus from the ſurface is to the diſtance of the radiant point from the ſame, as the diſtance of the focus from the centre is to the diſtance of the radiant from thence. *Q. E. D.*

385. CASE 2. Of converging rays falling upon a concave ſurface. DEM. Let KD and CB be the converging incident rays, having their imaginary focus in the point R, which was the radiant in the foregoing caſe. Then as RD was in that caſe reflected into DE, KD will in this be reflected into DF; for, ſince the angles of incidence in both caſes are equal, as they are by being vertical, the angles of reflection will be ſo too; ſo that F will be the focus of the reflected rays: but it was there demonſtrated, that FB is to RB as CF to CR; that is, the diſtance of the focus from the ſurface is to the diſtance (in this Caſe) of the imaginary focus of the incident rays, as the diſtance of the imaginary focus of the incident rays from the ſame. *Q. E. D.*

386. CASE 3. Of converging rays falling upon a convex ſurface, and tending to a point between the focus of parallel rays and the centre. DEM. Let BD (*Pl.* CCLI, *fig.* 12.) repreſent a convex ſurface whoſe centre is C, and whoſe focus of parallel rays is P; and let AB, KD, be two converging rays incident upon it, and having their imaginary focus at R, a point between P and C. Now becauſe KD tends to a point between the focus of parallel rays and the centre, the reflected ray DE will diverge from ſome point on the other ſide of the centre, ſuppoſe F; as explained above (§ 375.) under Prop. vii. Through D draw the perpendicular CD, and produce it to H; then will KDH and HDE be the angles of incidence and reflection, which being equal, their vertical ones RDC and CDF will be ſo too, and therefore the vertex of the triangle RDF is biſected by the line DC: wherefore FD and DR, or, BD vaniſhing, FB and BR are to each other as FC to CR; that is, the diſtance of the focus of the reflected rays is to that of the imaginary focus of the incident ones, as the diſtance of the former from the centre is to the diſtance of the latter from the ſame. *Q. E. D.*

387. CASE 4. Of diverging rays falling upon a concave ſurface, and proceeding from a point between the focus of parallel rays and the centre. DEM. Let RB, RD, (*Pl.* CCLI, *fig* 12.) be the diverging rays incident upon the concave ſurface BD, having their radiant point in the point R, the imaginary focus of the incident rays in the foregoing caſe. Then as KD was in that caſe reflected into DE, RD will now be reflected into DF. But it was there demonſtrated, that FB and RB are to each other as CF to CR; that is, the diſtance of the focus is to that of the radiant as the diſtance of the former from the centre is to the diſtance of the latter from the ſame. *Q. E. D.* The angles of incidence and reflection being equal, it is evident, that if, in any caſe, the reflected ray be made the incident one, the incident will become the reflected one; and therefore the four following caſes may be conſidered reſpective-

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ly as the converſe of the four foregoing; for in each of them the incident rays are ſuppoſed to coincide with the reflected ones in the other. Or they may be demonſtrated independently of them as follows.

388. CASE 5. Of converging rays falling upon a convex ſurface, and tending to a point nearer the ſurface than the focus of parallel rays. DEM. Let ED, RB (*Pl.* CCLVI, *fig.* 2.) be the converging rays incident upon the convex ſurface BD, whoſe centre is C, and focus of parallel rays is P; and let the imaginary focus of the incident rays be at F, a point between P and B; and let DR be the reflected ray. From C and R draw the lines CH, RH, the one paſſing through D, the other parallel to FE. Then will the angle RHD be equal to HDE the angle of incidence, as alternate to it; and therefore equal to HDR, the angle of reflection; wherefore the triangle HDR is iſoſceles, and conſequently DR is equal to RH. Now the lines FD and RH being parallel, the triangles FDC and RHC are ſimilar; and therefore RH, or RD, is to FD as CR to CF: but BD vaniſhing, RD and FD coincide with RB and FB; wherefore RB is to FB as CR to CF; that is, the diſtance of the focus from the ſurface is to the diſtance of the imaginary focus of the incident rays, as the diſtance of the focus from the centre is to the diſtance of the imaginary focus of the incident rays from the ſame. *Q. E. D.*

389. CASE 6. Of diverging rays falling upon a concave ſurface, and proceeding from a point between the focus of parallel rays and the ſurface. DEM. Let FD and FB repreſent two diverging rays flowing from the point F as a radiant, which was the imaginary focus of the incident rays in the foregoing caſe. Then as ED was in that caſe reflected into DR, FD will be reflected into DK (for the reaſon mentioned in Caſe 2.), ſo that the reflected ray will proceed as from the point R: but it was demonſtrated in the caſe immediately foregoing, that RB is to FB as CR to CF; that is, the diſtance of the focus from the ſurface is to that of the radiant from the ſame, as the diſtance of the former from the centre is to that of the latter from the ſame. *Q. E. D.*

390. CASE 7. Of converging rays falling upon a convex ſurface, and tending towards a point beyond the centre. DEM. Let AB, ED (*Pl.* CCLI, *fig.* 12.) be the incident rays tending to F, a point beyond the centre C, and let DK be the reflected ray of the incident one ED. Then, becauſe the incident ray ED tends to a point beyond the centre, the reflected ray DK will proceed as from one on the contrary ſide, ſuppoſe R; as explained above under Prop. VII. Through D draw the perpendicular CD, and produce it to H. Then will EDH and HDK be the angles of incidence and reflection; which being equal, their vertical ones CDF and CDR will be ſo too: conſequently the vertex of the triangle FDR is biſected by the line CD: Wherefore, RD is to DF, or (3 Elem. 6.) BD vaniſhing, RB is to BF as RC to CF; that is, the diſtance of the focus of the reflected rays is to that of the imaginary focus of the incident rays, as the diſtance of the former from the centre is to the diſtance of the latter from the ſame. *Q. E. D.*

391. CASE 8. Of diverging rays falling upon a concave ſurface, and proceeding from a point beyond the centre. DEM. Let FB, FD, be the incident rays having their radiant in F, the imaginary focus of the incident rays in the foregoing caſe. Then as ED was in that caſe reflected into DK, FD will now be reflected into DR; ſo that R will be the focus of the reflected rays. But it was demonſtrated in the foregoing caſe, that RB is to FB as RC to CF; that is, the diſtance of the focus of the reflected rays from the ſurface is to the diſtance of the radiant from the ſame, as the diſtance of the focus of the reflected rays from the centre is to the diſtance of the radiant from thence. *Q. E. D.*

392. The two remaining caſes may be conſidered as the converſe of thoſe under Prop. II. (§ 380.—382.) becauſe the incident rays in theſe are the reflected ones in them; or they may be demonſtrated in the ſame manner with the foregoing, as follows:

393. CASE 9. Converging rays falling upon a convex ſurface, and tending to the focus of parallel rays, become parallel after reflection. DEM. Let ED, RB (*Plate* CCLVI, *fig.* 2.) repreſent two converging rays incident on the convex ſurface BD, and tending towards F, which we will now ſuppoſe to be the focus of parallel rays; and let DR be the reflected ray, and C the centre of convexity of the reflecting ſurface. Through C draw the line CD, and produce it to H, drawing RH parallel to ED produced to F. Now it has been demonſtrated (Caſe 5. where the incident rays are ſuppoſed to tend to the point F), that RB is to FB as RC to CF; but F in this Caſe being ſuppoſed to be the focus of parallel rays, it is the middle point between C and B (by Prop. II.), and therefore FB and FC are equal; and conſequently the two other terms in the proportion, *viz.* RB and RC, muſt be ſo too; which can only be upon the ſuppoſition that R is at an infinite diſtance from B; that is, that the reflected rays BR and DR be parallel. *Q. E. D.*

394. CASE 10. Diverging rays falling upon a concave ſurface, and proceeding from the focus of parallel rays, become parallel after reflection. DEM. Let RD, RB (*Pl.* CCLI, *fig.* 12.) be two diverging rays incident upon the concave ſurface BD, as ſuppoſing in Caſe 4, where it was demonſtrated that FB is to RB as CF to CR. But in the preſent caſe RB and CR are equal, becauſe R is ſuppoſed to be the focus of parallel rays; therefore FB and FC are ſo too; which cannot be, unleſs F be taken at an infinite diſtance from B; that is, unleſs the reflected rays BF and DF be parallel. *Q. E. D.* OBS. In the caſe of diverging rays falling upon a convex ſurface (*Pl.* CCLVI, *fig.* 2.) the farther the point D is taken from B, the nearer the point F, the focus of the reflected rays, approaches to B, while the radiant R remains the ſame. For it is evident from the curvature of a circle, that the point D (*fig.* 3.) may be taken ſo far from B, that the reflected ray DE ſhall proceed as from F, G, H, or even from B, or from any point between B and R; and the farther it is taken from B, the farther the point from which it proceeds approaches towards R, as will eaſily appear if we draw ſeveral incident rays with their reſpective reflected ones, in ſuch manner that the angles

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angles of reflection may be all equal to their reſpective angles of incidence, as is done in the figure. The like is applicable to any of the other caſes of diverging or converging rays incident upon a ſpherical ſurface. This is the reaſon, that when rays are conſidered as reflected from a ſpherical ſurface, the diſtance of the oblique rays from the perpendicular one is taken ſo ſmall, that it may be ſuppoſed to vaniſh. From hence it follows, that if a number of diverging rays are incident upon the convex ſurface BD, at the ſeveral points B, D, D, &c. they ſhall not proceed after reflection as from any point in the line RB produced, but as from a curve line paſſing through the ſeveral points F, *f*, *f*, &c. The ſame is applicable in all the other caſes. Had the curvature BD (*fig.* 2. *Pl.* 256.) been hyperbolical, having its foci in R and F; then R being the radiant (or the imaginary focus of incident rays), F would have been the focus of the reflected ones, and *vice verſa*, however diſtant the points B and D might be taken from each other. In like manner, had the curve BD (*fig.* 12. *Pl.* 251.) been elliptical, having its foci in F and R, the one of theſe being made the radiant (or imaginary focus of incident rays), the other would have been the focus of reflected ones, and *vice verſa*. For both in the hyperbola and ellipſis, lines drawn from each of their foci through any point make equal angles with the tangent to that point. Therefore, if the incident rays proceed to or from one of their foci, the reflected ones will all proceed as from or to the other. So that, in order that diverging or converging rays may be accurately reflected to or from a point, the reflecting ſurface muſt be formed by the revolution of an *hyperbola* about its longer axis, when the incident rays are ſuch, that their radiant or imaginary focus of incident rays ſhall fall on one ſide the ſurface, and the focus of the reflected ones on the other: when they are both to fall on the ſame ſide, it muſt be formed by the revolution of an *ellipſis* about its longer axis. However, upon account of the great facility with which ſpherical ſurfaces are formed, in compariſon of that with which ſurfaces formed by the revolution of any of the conic ſections about their axes are made, the latter are very rarely uſed. Add to this another inconvenience, *viz.* that the foci of theſe curves being mathematical points, it is but one point of the ſurface of an object that can be placed in any of them at a time; ſo that it is only in theory that ſurfaces formed by the revolution of theſe curves about their axes render reflection perfect. Now, becauſe the focal diſtance of rays reflected from a ſpherical ſurface cannot be found by the analogy laid down in the third propoſition, without making uſe of the quantity ſought; we ſhall here give an inſtance whereby the method of doing it in all others will readily appear.

395. PROB. Let it be required to find the focal diſtance of diverging rays incident upon a convex ſurface, whoſe radius of convexity is 5 parts, and the diſtance of the radiant from the ſurface is 20. SOL. Call the focal diſtance ſought x; then will the diſtance of the focus from the centre be $5-x$, and that of the radiant from the ſame 25: therefore by Prop. 3. we have the following proportion, *viz.* $x : 20 :: 5-x : 25$; and multiplying extremes together and means together, we have $25x = 100 - 20x$; which, after due reduction gives, $x = \frac{100}{45}$. If in any caſe it ſhould happen that the value of x ſhould be a negative quantity, the focal point muſt then be taken on the contrary ſide of the ſurface to that on which it was ſuppoſed that it would fall in ſtating the problem. If letters inſtead of figures had been made uſe of in the foregoing ſolution, a general theorem might have been raiſed, to have determined the focal diſtance of reflected rays in all caſes whatever. (See Suppl. to *Gregory's Opticks*, 2d edit. p. 112.) Becauſe it was, in the preceding ſection, obſerved, that different incident rays, though tending to or from one point, would, after refraction, proceed to or from different points, a method was there inſerted of determining the diſtinct point which each ſeparate ray entering a ſpherical ſurface converges to, or diverges from, after refraction: the ſame has been obſerved here with regard to rays reflected from a ſpherical ſurface. (See Obſ. in Caſe 2. and Caſe 10.) But the method of determining the diſtinct point, to or from which any given incident ray proceeds after reflection, is much more ſimple. It is only neceſſary to draw the reflected ray ſuch, that the angle of reflection may be equal to the angle of incidence, which will determine the point it proceeds to or from, in any caſe whatever.

§ 3. *Of the* APPEARANCE *of* BODIES, *ſeen by* LIGHT *reflected from* PLANE *and* SPHERICAL SURFACES.

396. WHATEVER has been ſaid concerning the appearance of bodies ſeen by refracted light through lenſes, reſpects alſo the appearance of bodies ſeen by reflection. But there is one thing peculiar to images by reflection, viz. that each point in the repreſentation of an object made by reflection appears ſituated ſomewhere in an infinite right line that paſſes through its correſpondent point in the object, and is perpendicular to the reflecting ſurface. The truth of this appears from the propoſitions formerly laid down: in each of which, rays, flowing from any radiant point, are ſhown to proceed after reflection to or from ſome point in a line that paſſes through the ſaid radiant, and is perpendicular to the reflecting ſurface. For inſtance, (*fig.* 6. *pl.* CCLV.), rays flowing from Y are collected in X, a point in the perpendicular CD, which, being produced, paſſes through Y: again, (*fig.* 7.) rays flowing from G, proceed, after reflection as from N, a point in the perpendicular CD, which, being produced, paſſes through G; and ſo of the reſt. This obſervation, however, except where an object is ſeen by reflection from a plane ſurface, relates only to thoſe caſes where the repreſentation is made by ſuch rays as fall upon the reflecting ſurface with a very ſmall degree of obliquity; becauſe ſuch as fall from a conſiderable diſtance from the perpendicular, proceed not after reflection as from any point in that perpendicular, but as from other points ſituated in a certain curve, upon which account theſe rays are neglected, as making a confuſed and deformed repreſentation. And therefore, however the ſituation of the eye with reſpect to the object and reflecting ſurface may be repreſented in the following figures, it is to be ſuppoſed as ſituated in ſuch

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a manner with respect to the object, that rays flowing thence and entering it after reflection, may be such only as fall with a very small degree of obliquity upon the surface; that is, the eye must be supposed to be placed almost directly behind the object, or between it and the reflecting surface.

397. I. When an object is seen by reflection from a plane surface, the image of it appears at the same distance behind the surface that the object is placed before it, of the same magnitude therewith, and directly opposite to it. To explain this, let AB (*fig.* 4. *pl.* CCLVI.) represent an object seen by reflection from the plain surface SV; and let the rays AF, AG, be so inclined to the surface, that they shall enter an eye at H after reflection; and let AE be perpendicular to the surface: then, by the observation just mentioned, the point A will appear in some part of the line AE produced, suppose I; that is, the oblique rays AF and AG will proceed, after reflection, as from that point; and further, because the reflected rays FH, GK, will have the same degree of inclination to one another that their incident ones have, that point must necessarily be at the same distance from the surface that the point A is; the representation therefore of the point A will be at the same distance behind the surface that the point itself is before it, and directly opposite to it: consequently, since the like may be shown of the point B, or of any other, the whole image IM will appear at the same distance behind the surface that the object is before it, and directly opposite to it; and because the lines AI, BM, which are perpendicular to the plain surface, are for that reason parallel to each other, it will also be of the same magnitude therewith.

398. II. When an object is seen by reflection from a convex surface, its image appears nearer to the surface, and less than the object. Let AB (*fig.* 5. *pl.* 256.) represent the object, SV a reflecting surface whose centre of convexity is C: and let the rays AF, AG, be so inclined to the surface, that, after reflection therefrom, they shall enter the eye at H: and let AE be perpendicular to the surface; then will the oblique rays AF AG proceed after reflection as from some point in the line AE produced, suppose from I; which point because the reflected rays will diverge more than the incident ones, must be nearer to the surface than the point A. And since the same is also true of the rays which flow from B, or any other point, the representation IM will be nearer to the surface than the object; and because it is terminated by the perpendiculars AE and BF, which incline to each other, as concurring at the centre, it will also appear less.

399. III. When an object is seen by reflection from a concave surface, the representation of it is various, both with regard to its magnitude and situation, according as the distance of the object from the reflecting surface is greater or less.

400. i. When the object is nearer to the surface than its focus of parallel rays, the image falls on the opposite side of the surface, is more distant from it, and larger than the object. Thus, let AB (*fig.* 11. *pl.* CCLV.) be the object, SV the reflecting surface, F the focus of parallel rays, and C its centre. Through A and B, the extremities of the object, draw the lines CE, CR, which will be perpendicular to the surface; and let the rays AR AG be incident upon such points of it that they shall be reflected into an eye at H. Now, because the radiant points A and B are nearer the surface F than the focus of parallel rays, the reflected rays will diverge, and will therefore proceed as from some points on the opposite side of the surface; which points by the observation laid down at the beginning of this section, will be in the perpendiculars AE, BR, produced, suppose in I and M: but they will diverge in a less degree than their incident ones, (see the proposition just referred to); and therefore the said points will be farther from the surface than the points A and B. The image therefore will be on the opposite side of the surface with respect to the object: it will be more distant than it; and consequently being terminated by the perpendiculars CI and CM, it will also be larger.

401. ii When the object is placed in the focus of parallel rays, the reflected rays enter the eye parallel: in which case the image ought to appear at an infinite distance behind the reflecting surface: but the representation of it, for the like reasons that were given in the foregoing case, (§ 396) being large and distinct, we judge it not much farther from the surface than the image.

402. iii. When the object is placed between the focus of parallel rays and the centre, the image falls on the opposite side of the centre, is larger than the object, and in an inverted position. Thus let AB (*fig.* 6. *pl.* 256.) represent the object, SV the reflecting surface, F its focus of parallel rays, and C its centre. Through A and B, the extremities of the object, draw the lines CE and CN, which will be perpendicular to the surface; and let AR, AG, be a pencil of rays flowing from A. These rays, proceeding from a point beyond the focus of parallel rays, will, after reflection, converge towards some point on the opposite side the centre, which will fall upon the perpendicular EC produced, but at a greater distance from C than the radiant A from which they diverged. For the same reason, rays flowing from B will converge to a point in the perpendicular NC produced, which shall be farther from C than the point B; whence it is evident, that the image IM is larger than the object AB, that it falls on the contrary side of the centre, and that their positions are inverted with respect to each other.

403. iv. If the object be placed beyond the centre of convexity, the image is then formed between the centre and the focus of parallel rays, is less than the object, and its position is inverted. This proposition is the converse of the foregoing: for as in that case rays proceeding from A were reflected to I, and from B to M; so rays flowing from I and M will be reflected to A and B: if therefore an object be supposed to be situated beyond the centre in IM, the image of it will be formed in AB between that and the focus of parallel rays, will be less than the object, and inverted.

404. v. If the middle of the object be placed in the centre of convexity of the reflecting surface, the object and its image will be coincident; but the image will be inverted with respect to the object. That the place of the image and the object should

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ſhould be the ſame in this caſe needs little explication; for the middle of the object being in the centre, rays flowing from thence will fall perpendicularly upon the ſurface, and therefore neceſſarily return thither again; ſo that the middle of the image will be coincident with the middle of the object. But that the image ſhould be inverted, is perhaps not ſo clear. To explain this, let AB (*fig.* 18. *pl.* CCLII.) be the object, having its middle point C in the centre of the reflecting ſurface SV; through the centre and the point R draw the line CR, which will be perpendicular to the reflecting ſurface; join the points AR and BR, and let AR repreſent a ray flowing from A; this will be reflected into RB; for C being the middle point between A and B, the angles ARC and CRB are equal; and a ray from B will likewiſe be reflected to A; and therefore the poſition of the image will be inverted with reſpect to that of the object. In this propoſition, it is to be ſuppoſed that the object AB is ſo ſituated with reſpect to the reflecting ſurface, that the angle ACR may be right; for otherwiſe the angles ARC and BRC will not be equal, and part of the image will therefore fall upon the object and part off.

405. vi. If in any of the three laſt caſes, in each of which the image is formed on the ſame ſide of the reflecting ſurface with the object, the eye be ſituated farther from the ſurface than the place where the image falls, the rays of each pencil, croſſing each other in the ſeveral points of the image, will enter the eye as from a real object ſituated there; ſo that the image will appear pendulous in the air between the eye and the reflecting ſurface, and in the poſition wherein it is formed, viz. inverted with reſpect to the object, in the ſame manner that an image formed by refracted light appears to an eye placed beyond it; which was fully explained under Prop. IV. (§ 356.) and therefore needs not be repeated. But as what relates to the appearance of the object when the eye is placed nearer to the ſurface than the image, was not there fully inquired into, that point ſhall now be more ſtrictly examined under the following caſe, which equally relates to refracted and reflected light.

406. vii. If the eye be ſituated between the reflecting ſurface and the place of the image, the object is then ſeen beyond the ſurface; and the farther the eye recedes from the ſurface towards the place of the image, the more confuſed, larger, and nearer the object appears. To explain this, let AB (*fig.* 7. *pl.* 256.) repreſent the object; IM its image, one of whoſe points M is formed by the concurrence of the reflected rays DM, EM, &c. which before reflection came from B; the other, I, by the concurrence of DI, EI, &c. which came from A; and let *ab* be the pupil of an eye, ſituated between the ſurface DP and the image. This pupil will admit the rays H*a*, K*b*; which, becauſe they are tending towards I, are ſuch as came from A, and therefore the point A will appear diffuſed over the ſpace RS. In like manner the pupil will alſo receive into it the reflected rays K*a* and L*b*, which, becauſe they are tending towards M, by ſuppoſition came from B; and therefore the point B will be ſeen ſpread as it were over the ſpace TV, and the object will ſeem to fill the ſpace RV; but the repreſentation of it will be confuſed, becauſe the intermediate points of the object being equally enlarged in appearance, there will not be room for them between the points S and T, but they will coincide in part one with another; for inſtance, the appearance of that point in the object whoſe repreſentation falls upon *e* in the image, will fill the ſpace *mn*; and ſo of the reſt. Now, if the ſame pupil be removed into the ſituation *ef*, the reflected rays E*e* and G*f* will then enter the eye, and therefore one extremity of the object will appear to cover the ſpace XY; and becauſe the rays O*f* and L*e* will alſo enter it in their progreſs towards M, the point B from whence they came will appear to cover ZV; the object therefore will appear larger and more confuſed than before. And when the eye recedes quite to the image, it ſees but one ſingle point of the object, and that appears diffuſed all over the reflecting ſurface. For inſtance, if the eye recedes to the point M, then rays flowing from the point B enter it, upon whatever part of the ſurface they fall; and ſo for the reſt. The object alſo appears nearer to the ſurface, the farther the eye recedes from it towards the place of the image; probably becauſe, as the appearance of the object becomes more and more confuſed, its place is not ſo eaſily diſtinguiſhed from that of the reflecting ſurface itſelf, till at laſt, when it is quite confuſed (as it is when the eye is arrived at M) they both appear as one, the ſurface aſſuming the colour of the object. As to the preciſe apparent magnitude of an object ſeen after this manner, it is ſuch that the angle it appears under ſhall be equal to that which the image of the ſame object would appear under, were we to ſuppoſe it ſeen from the ſame place; that is, the apparent object (for ſuch we muſt call it, to diſtinguiſh it from the image of the ſame object) and the image ſubtend equal angles at the eye.

407. DEM. Here we muſt ſuppoſe the pupil of the eye to be a point only, becauſe the magnitude of that cauſes ſmall alteration in the apparent magnitude of the object; as we ſhall ſee by and by. Let then the point *a* repreſent the pupil, then will the extreme rays that can enter it be H*a* and K*a*; the object therefore will appear under the angle H*a*K, which is equal to its vertical one M*a*I, under which the image IM would appear were it to be ſeen from *a*. Again, if the eye be placed in *f*, the object appears under the angle G*f*O equal to I*f*M, which the image ſubtends at the ſame place; and therefore the apparent object and image of it ſubtend equal angles at the eye. *Q. E. D.* Now if we ſuppoſe the pupil to have any ſenſible magnitude, ſuch, ſuppoſe, that its diameter may be *ab*; then the object ſeen by the eye in that ſituation will appear under the angle HXL, which is larger than the angle H*a*K, under which it appeared before; becauſe the angle at X is nearer than the angle at *a* to the line IM, which is a ſubtenſe common to them both. From this propoſition it follows, that, were the eye cloſe to the ſurface at K, the real and apparent object would be ſeen under equal angles (for the real object appears from that place under the ſame angle that the image does, as will be ſhown at the end of this ſection); therefore, when the eye is nearer to the image than that point, the image will ſubtend a larger angle at it than

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than the object does; and consequently, since the image and apparent object subtend equal angles at the eye, the apparent object must necessarily be seen under a larger angle than the object itself, wherever the eye be placed, between the surface and the image. As each point in the representation of an object made by reflection is situated somewhere in a right line that passes through its correspondent point in the object, and is perpendicular to the reflecting surface, as was shown in the beginning of this section; we may from hence deduce a most easy and expeditious method of determining both the magnitude and situation of the image in all cases whatever. Thus, through the extremities of the object AB and the centre C (*fig.* 13. *pl.* CCXLIX; 12, or 13, *pl.* CCLV.) draw the lines AC, BC, and produce them as the case requires; these lines will be perpendicular to the reflecting surface, and therefore the extremities of the image will fall upon them. Through F, the middle point of the object and the centre, draw the line FC, and produce it till it passes through the reflecting surface; this will also be perpendicular to the surface. Through G, the point where this line cuts the surface, draw the lines AG and BG, and produce them this way or that, 'till they cross the former perpendiculars; and where they cross, there I and M, the extremities of the image, will fall. For supposing AG to be a ray proceeding from the point A, and falling upon G, it will be reflected to B; because FA is equal to FB, and FG is perpendicular to the reflecting surface; and therefore the representation of the point A will be in BG produced, as well as in AC; consequently it will fall on the point I, where they cross each other. Likewise the ray BG will for the same reason be reflected to A; and therefore the representation of the point B will be in AG produced, as well as in some part of BC, that is in M, where they cross; whence the proposition is clear. If it happens that the lines will not cross, which way soever they are produced, (as in *fig.* 8. *pl.* CCLVI.), then is the object in the focus of parallel rays of that surface, and has no image formed in any place whatever. For in this case the rays AH, AG, flowing from the point A, become parallel after reflection in the lines HC, GB, and therefore do not flow as to or from any point: in like manner rays flowing from B are reflected into the parallel lines KB and GA; so that no representation can be formed by such reflection. Hence we learn another circumstance relating to the magnitude of the image made by reflection; viz. that it subtends the same angle at the vertex of the reflecting surface that the object does. This appears by inspection of (*fig.* 13. *pl.* CCLIX.; 12 or 13, *pl.* CCLV), in each of which the angle IGM, which the image subtends at G, the vertex of the reflecting surface, is equal to the angle AGB, which the object subtends at the same place; for in the two first of those figures they are vertical, in the third they are the same. And the angle ICM, which the image subtends at the centre, is also equal to the angle ACB, which the object subtends at the same place; for in the two first figures they are the same, in the last they are vertical to each other. Whence it is evident, that the object and its image are to each other in diameter, either as their respective distances from the vertex of the reflecting surface, or as their distances from the centre of the same.

408. IV. As objects are multiplied by being seen through transparent media, whose surfaces are properly disposed, so they may also by reflecting surfaces. Thus, 1. If two reflecting surfaces be disposed at right angles, as the surfaces AB, BC, (*fig.* 9. *plate* CCLVI.) an object at D may be seen by an eye at E, after one reflection at F, in the line EF produced; after two reflections, the first at G, the second at H, in the line EH produced; and also, after one reflection made at A, in the line EA produced. 2. If the surfaces be parallel, as AB, CD (*fig.* 10. *plate* CCLVI.) and the object be placed at E and the eye at F, the object will appear multiplied an infinite number of times; thus, it may be seen in the line FG produced, after one reflection at G; in the line FH produced after two reflections, the first at I, the second at H; and also in FP produced, after several successive reflections of the ray EL, at the points L, M, N, O, and P; and so on *in infinitum*. But the greater the number of reflections are, the weaker their representation will be.

SECT. V. *Of the* DIFFERENT REFRANGIBILITY *of* LIGHT.

409. As this property of light solves a great number of the phenomena which could not be understood by former opticians, we shall give an account of it in the words of Sir ISAAC NEWTON, who first discovered it; especially as his account is much more full, clear, and perspicuous, than those of succeeding writers.

410. "In a very dark chamber, at a round hole F (*fig.* 11. *Plate* CCLVI.) about one 3d of an inch broad made in the shut of a window, I placed a glass prism ABC, whereby the beam of the sun's light, SF, which came in at that hole, might be refracted upwards, toward the opposite wall of the chamber, and there form a coloured image of the sun, represented at PT. The axis of the prism (that is, the line passing through the middle of the prism, from one end of it to the other end, parallel to the edge of the refracting angle) was in this and the following experiments perpendicular to the incident rays. About this axis I turned the prism slowly, and saw the refracted light on the wall, or coloured image of the sun, first to descend, and then to ascend. Between the descent and ascent, when the image seemed stationary, I stopped the prism and fixed it in that posture. Then I let the refracted light fall perpendicularly upon a sheet of white paper, MN, placed at the opposite wall of the chamber, and observed the figure and dimensions of the solar image, PT, formed on the paper by that light. This image was oblong, and not oval, but terminated by two rectilinear and parallel sides, and two semicircular ends. On its sides it was bounded pretty distinctly, but on its ends very confusedly and indistinctly; the light there decaying and vanishing by degrees. At the distance of 18½ feet from the prism the breadth of the image was about 2⅛ inches, but its length was about 10¼ inches, and the length of its rectilinear sides about eight

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8 inches; and ACB, the refracting angle of the prism, whereby so great a length was made, was 64°. With a less angle the length of the image was less, the breadth remaining the same. It is farther to be observed, that the rays went on in straight lines from the prism to the image, and therefore, at their going out of the prism, had all that inclination to one another from which the length of the image proceeded. This image PT was coloured, and the more eminent colours lay in this order from the bottom at T to the top at P; red, orange, yellow, green, blue, indigo, violet; together with all their intermediate degrees, in a continual succession, perpetually varying."

411. Sir Isaac concludes from this experiment, and many others, "that the light of the sun consists of a mixture of several sorts of coloured rays, some of which at equal incidences are more refracted than others, and therefore are called *more refrangible*. The red at T, being nearest to the place Y, where the rays of the sun would go directly if the prism was taken away, is the least refracted of all the rays; and the orange, yellow, green, blue, indigo, and violet, are continually more and more refracted, as they are more and more diverted from the course of the direct light. For by mathematical reasoning he has proved, that when the prism is fixed in the posture above mentioned, so that the place of the image shall be the lowest possible, or at the limit between its descent and ascent, the figure of the image ought then to be round like the spot at Y, if all the rays that tended to it were equally refracted. Therefore, seeing by experience it is found that this image is not round, but about five times longer than broad, it follows that all the rays are not equally refracted. And this conclusion is farther confirmed by the following experiments: "In the sun-beam SF (*fig.* 12. *Plate* CCLVI.), which was propagated into the room through the hole in the window-shut EG, at the distance of some feet from the hole, I held the prism ABC in such a posture, that its axis might be perpendicular to that beam; then I looked through the prism upon the hole F, and turning the prism to and fro about its axis to make the image *p t* of the hole ascend and descend, when between its two contrary motions it seemed stationary, I stopped the prism; in this situation of the prism, viewing through it the said hole F, I observed the length of its refracted image *p t* to be many times greater than its breadth; and that the most refracted part thereof appeared violet at *p*; the least refracted red, at *t*; and the middle parts indigo, blue, green, yellow, and orange, in order. The same thing happened when I removed the prism out of the sun's light, and looked through it upon the hole shining by the light of the clouds beyond it. And yet if the refractions of all the rays were equal, according to one certain proportion of the sines of incidence and refraction, as is vulgarly supposed, the refracted image ought to have appeared round, by the mathematical demonstration above mentioned. So then, by these two experiments it appears, that in equal incidences there is a considerable inequality of refractions."

412. For the discovery of this fundamental property of light, which has opened the whole mystery of colours, our author was not only beholden to the experiments themselves which many others had made before him, but also to his skill in geometry; which was absolutely necessary to determine what the figure of the refracted image ought to be upon the old principle of an *equal refraction of all the rays*: but having thus made the discovery, he contrived the following experiment to prove it at sight.

413. "In the middle of two thin boards, DE, *de*, (*fig.* 13. *Pl.* CCLVI.) I made a round hole in each at G and *g*, a third part of an inch diameter; and in the window-shut a much larger hole being made at F, to let into my darkened chamber a large beam of the sun's light, I placed a prism, ABC, behind the shut in that beam, to refract it towards the opposite wall; and close behind this prism I fixed one of the boards DE, in such a manner that the middle of the refracted light might pass through the hole made in it at G, and the rest be intercepted by the board. Then at the distance of about 12 feet from the first board, I fixed the other board, *d e*, in such a manner that the middle of the refracted light, which came through the hole in the first board, and fell upon the opposite wall, might pass through the hole *g* in this other board *d e*, and the rest, being intercepted by the board, might paint upon it the coloured spectrum of the sun. And close behind this board I fixed another prism *a b c*, to refract the light which came through the hole *g*. Then I returned speedily to the first prism ABC, and by turning it slowly to and fro about its axis, I caused the image which fell upon the 2d board *d e*, to move up and down upon that board, that all its parts might pass successively through the hole in that board, and fall upon the prism behind it. And in the mean time I noted the places, M, N, on the opposite wall, to which that light, after its refraction in the 2d prism, did pass; and by the difference of the places at M and N, I found that the light, which, being most refracted in the first prism ABC, did go to the blue end of the image, was again more refracted by the 2d prism *a b c*, than the light which went to the red end of that image. For when the lower part of the light which fell upon the 2d board *d e*, was cast through the hole *g*, it went to a lower place M on the wall; and when the higher part of that light was cast through the same hole *g*, it went to a higher place N on the wall; and when any intermediate part of the light was cast through that hole, it went to some place in the wall between M and N. The unchanged position of the holes in the boards made the incidence of the rays upon the 2d prism to be the same in all cases. And yet in that common incidence some of the rays were more refracted and others less; and those were more refracted in this prism, which by a greater refraction in the first prism were more turned out of their way; and therefore, for their constancy of being more refracted, are deservedly called *more refrangible*."

414. Our author shows also by experiments made with convex glass, that lights (reflected from natural bodies) which differ in colour, differ also in degrees of refrangibility; and that they differ in the same manner as the rays of the sun do-

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do. The sun's light consists of rays differing in reflexibility, and those rays are more reflexible than others which are more refrangible. A prism, ABC, (*fig.* 14. *Pl.* CCLVI.) whose two angles, at its base BC, were equal to one another, and half right ones, and the third at A a right one, I placed in a beam FM of the sun's light, let into a dark chamber through a hole F, one third part of an inch broad. And turning the prism slowly about its axis, until the light, which went through one of its angles ACB, and was refracted by it to G and H_2, began to be reflected into the line MN by its base BC, at which till then it went out of the glass; I observed that those rays, as MH, which had suffered the greatest refraction, were sooner reflected than the rest. To make it evident that the rays which vanished at H were reflected into the beam MN, I made this beam pass through another prism VKY, and being refracted by it, to fall afterwards upon a sheet of white paper *p t* placed at some distance behind it, and there by that refraction to paint the usual colours at *p t*. Then causing the first prism to be turned about its axis, according to the order of the letters ABC, I observed, that when those rays MH, which in this prism had suffered the greatest refraction, and appeared blue and violet, began to be totally reflected, the blue and violet light on the paper which was most refracted in the second prism received a sensible increase at *p*, above that of the red and yellow at *t*; and afterwards, when the rest of the light, which was green, yellow, and red, began to be totally reflected and vanished at G, the light of those colours at *t*, on the paper *p t*, received as great an increase as the violet and blue had received before; which puts it past dispute, that those rays became first of all totally reflected at the base BC, which before, at equal incidences with the rest upon the base BC, had suffered the greatest refraction. I do not here take notice of any refractions made in the sides AC, AB, of the first prism, because the light enters almost perpendicularly at the first side, and goes out almost perpendicularly at the second; and therefore suffers none, or so little, that the angles of incidence at the base BC are not sensibly altered by it; especially if the angles of the prism at the base BC be each about 40°. For the rays FM begin to be totally reflected when the angle CMF is about 50°, and therefore they will then make a right angle of 90° with AC. It appears also from experiments, that the beam of light MN, reflected by the base of the prism, being augmented, first by the more refrangible rays, and afterwards by the less refrangible, is composed of rays differently refrangible.

415. "The light whose rays are all alike refrangible, I call *simple*, *homogeneal* and *similar*; and that whose rays are some more refrangible than others, I call *compound*, *heterogeneal* and *dissimilar*. The former light I call HOMOGENEAL, not because I would affirm it so in all respects, but because the rays which agree in refrangibility agree at least in all their other properties which I consider in the following discourse. The colours of homogeneal lights I call *primary*, *homogeneal*, and *simple*; and those of HETEROGENEAL lights, *heterogeneal* and *compound*. For these are always compounded of homogeneal lights, as will appear in the following discourse. The homogeneal lights and rays which appear red, or rather make objects appear so, I call *rubrific* or *red-making*; those which make objects appear yellow, green, blue, and violet, I call *yellow-making*, *green-making*, *blue-making*, *violet-making*; and so of the rest. And if at any time I speak of light and rays as *coloured* or *endowed with colours*, I would be understood to speak, not philosophically and properly, but grossly, and according to such conceptions as vulgar people in seeing all these experiments would be apt to frame. For the rays, to speak properly, are not coloured. In them there is nothing else than a certain power and disposition to stir up a sensation of this or that colour. For as sound, in a bell or musical string, or other sounding body, is nothing but a trembling motion, and in the air nothing but that motion propagated from the object, and in the sensorium it is a sense of that motion under the form of sound; so colours in the object are nothing but a disposition to reflect this or that sort of rays more copiously than the rest: in rays they are nothing but their dispositions to propagate this or that motion into the sensorium, and in the sensorium they are sensations of those motions under the forms of colours." See CHROMATICS.

416. "By the mathematical proposition above mentioned, it is certain that the rays which are equally refrangible do fall upon a circle answering to the sun's apparent disk, which will also be proved by experiment by and by. Now let AG (*fig.* 15. *Pl.* CCLVI.) represent the circle which all the most refrangible rays, propagated from the whole disk of the sun, would illuminate and paint upon the opposite wall if they were alone; EL the circle, which all the least refrangible rays would in like manner illuminate if they were alone: BH, CI, DK, the circles which so many intermediate sorts would paint upon the wall, if they were singly propagated from the sun in successive order, the rest being intercepted; and conceive that their are other circles without number, which innumerable other intermediate sorts of rays would successively paint upon the wall, if the sun should successively emit every sort apart. And seeing the sun emits all these sorts at once, they must all together illuminate and paint innumerable equal circles; of all which, being, according to their degrees of refrangibility, placed in order in a continual series, that oblong spectrum PT is composed, which was described in the first experiment.

417. "Now if these circles, whilst their centres keep their distances and positions, could be made less in diameter, their interfering one with another, and consequently the mixture of the heterogeneous rays, would be proportionably diminished. Let the circles AG, BH, CI, &c. remain as before; and let *ag*, *bh*, *ci*, &c. be so many less circles lying in a like continual series between two parallel right lines *a e* and *g l*, with the same distances between their centres, and illuminated with the same sorts of rays; that is, the circle *a g* with the same sort by which the corresponding circle AG was illuminated; and the rest of the circles *b h*, *c i*, *d k*, *e l*, respectively, with the same sorts of rays by which the corresponding circles

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BH, CI, DK, EL, were illuminated. In the figure PT, compoſed of the great circles, three of thoſe, AG, BH, CI, are ſo expanded into each other, that three ſorts of rays, by which thoſe circles are illuminated, together with innumerable other ſorts of intermediate rays, are mixed at QR in the middle of the circle BH: and the like mixture happens throughout almoſt the whole length of the figure PT. But in the figure *p t*, compoſed of the leſs circles, the three leſs circles *a g*, *b h*, *c i*, which anſwer to thoſe three greater, do not extend into one another; nor are there anywhere mingled ſo much as any two of the three ſorts of rays by which thoſe circles are illuminated, and which in the figure PT are all of them intermingled at QR. So then, if we would diminiſh the mixture of the rays, we are to diminiſh the diameters of the circles. Now theſe would be diminiſhed if the ſun's diameter, to which they anſwer, could be made leſs than it is, or (which comes to the ſame purpoſe) if without doors, at a great diſtance from the priſm towards the ſun, ſome opaque body were placed, with a round hole in the middle of it, to intercept all the ſun's light, except ſo much as, coming from the middle of his body, could paſs through that hole to the priſm. For ſo the circles AG BH, and the reſt, would not any longer anſwer to the whole diſk of the ſun, but only to that part of it which could be ſeen from the priſm through that hole; that is, to the apparent magnitude of that hole viewed from the priſm. But that theſe circles may anſwer more diſtinctly to that hole, a lens is to be placed by the priſm to caſt the image of the hole (that is, every one of the circles AG, BH, &c.) diſtinctly upon the paper at PT; after ſuch a manner, as by a lens, placed at a window, the pictures of objects abroad are caſt diſtinctly upon a paper within the room. If this be done, it will not be neceſſary to place that hole very far off, no not beyond the window. And therefore, inſtead of that hole, I uſed the hole in the window-ſhut as follows:

418. "In the ſun's light let into my darkened chamber through a ſmall round hole in my window-ſhut, at about 10 or 12 feet from the window, I placed a lens MN (*fig.* 15. *Pl.* CCL.) by which the image of the hole F might be diſtinctly caſt upon a ſheet of white paper placed at I. Then immediately after the lens I placed a priſm ABC, by which the trajected light might be refracted either upwards or ſideways, and thereby the round image, which the lens alone did caſt upon the paper at I, might be drawn out into a long one with parallel ſides, as repreſented at P *t*. This oblong image I let fall upon another paper at about the ſame diſtance from the priſm as the image at I, moving the paper either towards the priſm or from it, until I found the juſt diſtance where the rectilinear ſides of the image P *t* become moſt diſtinct. For in this caſe the circular images of the hole, which compoſe that image, after the manner that the circles *a g*, *b h*, *c i*, &c. do the figure P *t*, were terminated moſt diſtinctly, and therefore extended into one another the leaſt that they could; and by conſequence the mixture of the heterogeneous rays was now the leaſt of all. The circles *a g*, *b h*, *c i*, &c. which compoſe the image P *t*, are each equal to the circle at I; and therefore, by diminiſhing the hole F, or by removing the lens farther from it, may be diminiſhed at pleaſure, whilſt their centres keep the ſame diſtances from each other. Thus, by diminiſhing the breadth of the image P *t*, the circles of heterogeneal rays that compoſe it may be ſeparated from each other as much as you pleaſe. Yet inſtead of the circular hole F, it is better to ſubſtitute an oblong hole ſhaped like a parallelogram, with its length parallel to the length of the priſm. For if this hole be an inch or two long, and but a 10th or 20th part of an inch broad, or narrower, the light of the image P *t* will be as ſimple as before, or ſimpler; and the image, being much broader, is therefore fitter to have experiments tried in its light than before.

419. "Homogeneal light is refracted regularly without any dilatation, ſplitting, or ſhattering of the rays; and the confuſed viſion of objects ſeen through refracting bodies by heterogeneal light ariſes from the different refrangibility of ſeveral ſorts of rays. This will appear by the experiments which follow. In the middle of a black paper I made a round hole about a 5th or 6th part of an inch in diameter. Upon this paper I cauſed the ſpectrum of homogeneal light deſcribed in the former article ſo to fall, that ſome part of the light might paſs through the hole in the paper. This tranſmitted part of the light I refracted with a priſm placed behind the paper; and letting this refracted light fall perpendicularly upon a white paper, 2 or 3 feet diſtant from the priſm, I found that the ſpectrum formed on the paper by this light was not oblong, as when it is made in the firſt experiment, by refracting the ſun's compound light, but was, ſo far as I could judge by my eye, perfectly circular, the length being nowhere greater than the breadth; which ſhows that this light is refracted regularly without any dilatation of the rays, and is an ocular demonſtration of the mathematical propoſition mentioned above.

420. "In the homogeneal light I placed a paper circle of a quarter of an inch in diameter: and in the ſun's unrefracted, heterogeneal, white light, I placed another paper circle of the ſame bigneſs; and going from theſe papers to the diſtance of ſome feet, I viewed both circles through a priſm. The circle illuminated by the ſun's heterogeneal light appeared very oblong, as in the 2d experiment, the length being many times greater than the breadth. But the other circle, illuminated with homogeneal light, appeared circular, and diſtinctly defined, as when it is viewed by the naked eye; which proves the whole propoſition mentioned in the beginning of this article. In the homogeneal light I placed flies and ſuch like minute objects, and viewing them through a priſm I ſaw their parts as diſtinctly defined as if I had viewed them with the naked eye. The ſame object placed in the ſun's unrefracted heterogeneal light, which was white, I viewed alſo through a priſm, and ſaw them moſt confuſedly defined, ſo that I could not diſtinguiſh their ſmaller parts from one another. I placed alſo the letters of a ſmall print one while in the homogeneal light, and then in the heterogeneal; and viewing them through a priſm, they appeared in the latter caſe

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ſo confuſed and indiſtinct that I could not read them; but in the former, they appeared ſo diſtinct that I could read readily, and thought I ſaw them as diſtinct as when I viewed them with my naked eye: in both caſes I viewed the ſame objects through the ſame priſm, at the ſame diſtance from me, and in the ſame ſituation. There was no difference but in the lights by which the objects were illuminated, and which in one caſe was ſimple, in the other compound; and therefore the diſtinct viſion in the former caſe, and confuſed in the latter, could ariſe from nothing elſe than from that difference in the lights. Which proves the whole propoſition.

421. "In theſe three experiments, it is farther very remarkable, that the colour of homogeneal light was never changed by the refraction. And as theſe colours were not changed by refractions, ſo neither were they by reflections. For all white, grey, red, yellow, green, blue, violet bodies, as paper, aſhes, red lead, orpiment, indigo, bice, gold, ſilver, copper, graſs, blue flowers, violets, bubbles of water tinged with various colours, peacock's feathers, the tincture of lignum nephriticum, and ſuch like, in red homogeneal light appeared totally red, in blue light totally blue, in green light totally green, and ſo of other colours. In the homogeneal light of any colour they all appeared totally of that ſame colour; with this only difference, that ſome of them reflected that light more ſtrongly, others more faintly. I never yet found any body which, by reflecting homogeneal light could ſenſibly change its colour. From all which it is manifeſt, that if the ſun's light conſiſted of but one ſort of rays, there would be but one colour in the world, nor would it be poſſible to produce any new colour by reflections and refractions; and by conſequence, that the variety of colours depends upon the compoſition of light.

422. "The ſolar image P*t*, formed by the ſeparated rays in the 5th experiment, did in the progreſs from its end P, on which the moſt refrangible rays fell, unto its end *t*, on which the leaſt refrangible rays fell, appear tinged with this ſeries of colours; violet, indigo, blue, green, yellow, orange, red, together with all their intermediate degrees in a continual ſucceſſion, perpetually varying; ſo that there appeared as many degrees of colours as there were ſorts of rays differing in refrangibility. And ſince theſe colours could not be changed by refractions nor by reflections, it follows, that all homogeneal light has its proper colour anſwering to its degree of refrangibility.

423. "Every homogeneal ray conſidered apart is refracted, according to one and the ſame rule, ſo that its ſine of incidence is to its ſine of refraction in a given ratio; that is, every different coloured ray has a different ratio belonging to it. This our author has proved by experiment, and by other experiments has determined by what numbers thoſe given ratios are expreſſed. For inſtance, if an heterogeneal white ray of the ſun emerges out of glaſs into air; or, which is the ſame thing, if rays of all colours be ſuppoſed to ſucceed one another in the ſame line AC, and AD (*Plate* 256. *fig.* 15.) their common ſine of incidence in glaſs be divided into 50 equal parts, then EF and GH, the ſines of refraction into air, of the leaſt and moſt refrangible rays, will be 77 to 78 ſuch parts reſpectively. And ſince every colour has ſeveral degrees, the ſines of refraction of all the degrees of red will have all intermediate degrees of magnitude from 77 to $77\frac{1}{6}$, of all the degrees of orange from $77\frac{1}{6}$ to $77\frac{1}{3}$, of yellow from $77\frac{1}{3}$ to $77\frac{1}{2}$, of green from $77\frac{1}{2}$ to $77\frac{2}{3}$, of blue from $77\frac{2}{3}$ to $77\frac{5}{6}$, of indigo from $77\frac{5}{6}$ to $77\frac{7}{8}$, and of violet from $77\frac{7}{8}$ to 78."

PART II.

SECT. I. *The* APPLICATION *of the* PRECEDING THEORY *to ſeveral* NATURAL PHENOMENA.

§. 1. *Of the* RAINBOW.

424. THIS beautiful phenomenon hath engaged the attention of all ages. By ſome nations it hath been deified; though the more ſenſible part always looked upon it as a natural appearance, and endeavoured, however imperfectly, to account for it. The obſervations of the ancients and philoſophers of the middle ages, concerning the rainbow, were ſuch as could not have eſcaped the notice of the moſt illiterate huſbandman who gazed at the ſky; and their various hypotheſes deſerve no notice. It was a conſiderable time even after the dawn of true philoſophy in this weſtern part of the world, before we find any diſcovery of importance on this ſubject. MAUROLYCUS was the firſt who pretended to have meaſured the diameters of two rainbows with much exactneſs; and he ſays, that he found that of the inner bow to be 45°, and that of the outer bow 56°; from which Deſcartes takes occaſion to obſerve, how little we can depend upon the obſervations of thoſe who were not acquainted with the cauſe of the appearances.

425. One CLICHTOVÆUS (who diſtinguiſhed himſelf by his oppoſition to Luther, and died in 1543) had maintained, that the 2d bow is the image of the firſt, as he thought was evident from the inverted order of the colours. For, ſaid he, when we look into the water, all the images that we ſee reflected by it are inverted with reſpect to the objects themſelves; the tops of the trees, for inſtance, that ſtand near the brink, appearing lower than the roots. That the rainbow is oppoſite to the ſun, had always been obſerved. It was, therefore, natural to imagine, that the colours of it were produced by ſome kind of reflection of the rays of light from drops of rain, or vapour. The regular order of the colours was another circumſtance that could not eſcape notice. But, notwithſtanding mere reflection had in no other caſe been obſerved to produce colours, and it could not but have been obſerved that refraction is frequently attended with that phenomenon, yet no perſon ſeems to have thought of having recourſe to a proper refraction in this caſe, before one FLECHER of Breſlau, who, in a treatiſe publiſhed in 1571, endeavoured to account for the colours of the rainbow by a double refraction and one reflection. But he imagined that a ray of light, after

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ter entering a drop of rain, and ſuffering a refraction both at its entrance and exit, was afterwards reflected from another drop before it reached the eye of the ſpectator. He ſeems to have overlooked the reflection at the farther ſide of the drop, or to have imagined that all the bendings of the light within the drop would not make a ſufficient curvature to bring the ray of the ſun to the eye of the ſpectator. That he ſhould think of two refractions, was the neceſſary conſequence of his ſuppoſing that the ray entered the drop at all. This ſuppoſition, therefore, was all the light he threw upon the ſubject. B. PORTA ſuppoſed that the rainbow is produced by the refraction of light in the whole body of rain or vapour, but not in the ſeparate drops.

426. After all, a man who had no pretenſion to philoſophy, hit upon this curious diſcovery. This was ANTHONY DE DOMINIS, Bp. of Spalatro, whoſe treatiſe *De Radiis Viſus et Lucis*, was publiſhed by J. Bartolus in 1611. He firſt advanced, that the double refraction of Fletcher, with an intervening reflection, was ſufficient to produce the colours of the bow, and alſo to bring the rays that formed them to the eye of the ſpectator, without any ſubſequent reflection. He diſtinctly deſcribes the progreſs of a ray of light entering the upper part of the drop, where it ſuffers one refraction, and after being thereby thrown upon the back part of the inner ſurface, is from thence reflected to the lower part of the drop; at which place undergoing a ſecond refraction, it is thereby bent ſo as to come directly to the eye. To verify this hypotheſis, the biſhop proceeded in a very ſenſible and philoſophical manner. For he procured a ſmall globe of ſolid glaſs, and viewing it when it was expoſed to the rays of the ſun, in the ſame manner in which he had ſuppoſed that the drops of rain were ſituated with reſpect to them, he actually obſerved the ſame colours which he had ſeen in the true rainbow, and in the ſame order.

427. Thus the circumſtances in which the colours of the rainbow were formed, and the progreſs of a ray of light through a drop of water, were clearly underſtood; but philoſophers were long at a loſs to aſſign reaſons for all the particular colours and for the order of them. Indeed nothing but the doctrine of the different refrangibility of the rays of light, a diſcovery reſerved for the great Sir Iſaac Newton, could furniſh a complete ſolution of this difficulty. De Dominis ſuppoſed that the red rays were thoſe which had traverſed the leaſt ſpace in the inſide of a drop of water, and therefore retained more of their native force, and conſequently, ſtriking the eye more briſkly, gave it a ſtronger ſenſation; that the green and blue colours were produced by thoſe rays, the force of which had been, in ſome meaſure, obtunded in paſſing through a greater body of water; and that all the intermediate colours were compoſed (according to the hypotheſis which prevailed at that time) of a mixture of theſe three primary ones. That the different colours were cauſed by ſome difference in the impulſe of light upon the eye, and the greater or leſs impreſſion that was thereby made upon it, was an opinion which had been adopted by many perſons who had ventured to depart from the authority of Ariſtotle.

428. Afterwards De Dominis obſerved, that all the rays of the ſame colour muſt leave the drop of water in a part ſimilarly ſituated with reſpect to the eye, in order that each of the colours may appear in a circle, the centre of which is a point of the heavens, in a line drawn from the ſun through the eye of the ſpectator. The red rays, he obſerved, muſt iſſue from the drops neareſt to the bottom of it, that the circle of red may be the outermoſt, and therefore the moſt elevated in the bow. But though he conceived ſo juſtly of the manner in which the inner rainbow is formed, he was far from having as juſt an idea of the cauſe of the exterior bow. This he endeavoured to explain in the ſame manner in which he had done the interior.

429. When Sir Iſaac Newton diſcovered the different refrangibility of the rays of light, he immediately applied his new theory of light and colours to the phenomena of the rainbow, taking this remarkable object of philoſophical inquiry, where De Dominis and Deſcartes were obliged to leave their inveſtigations imperfect. For they could give no good reaſon why the bow ſhould be coloured, and much leſs could they give any ſatisfactory account of the order in which the colours appear. If different particles of light had not different degrees of refrangibility, on which the colours depend, the rainbow, beſides being much narrower than it is, would be colourleſs; both the different refrangibility of differently coloured rays being admitted, the reaſon is obvious, both why the bow ſhould be coloured, and alſo why the colours ſhould appear in the order in which they are obſerved. Let *a* (*Pl.* CCLVI. *fig.* 17.) be a drop of water, and S a ray of light; which, on its leaving the drop of water, reaches the eye of the ſpectator; this ray, at its entrance into the drop, begins to be decompoſed into its proper colours; and upon leaving the drop, after one reflection and a ſecond refraction, it is farther decompoſed into as many ſmall differently coloured pencils as there are primitive colours in the light. Three of them only are drawn in this figure, of which the blue is the moſt, and the red the leaſt refracted.

430. The doctrine of the different refrangibility of light enables us to give a reaſon for the ſize of a bow of each particular colour. Newton, having found that the ſines of refraction of the moſt refrangible and leaſt refrangible rays, in paſſing from rain-water into air, are in the proportion of 185 to 182, when the ſine of incidence is 138, calculated the ſize of the bow; and he found, that if the ſun was only a phyſical point, without ſenſible magnitude, the breadth of the inner bow would be 2 degrees; and if to this 30′ was added, for the apparent diameter of the ſun, the whole breadth would be 2½ degrees. But as the outermoſt colours, eſpecially the violet, are extremely faint, the breadth of the bow will not in reality appear to exceed two degrees. He finds, by the ſame principles, that the breadth of the exterior bow, if it was everywhere equally vivid, would be

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be 4° 20′. But in this case there is a greater deduction to be made on account of the faintness of the light of the exterior bow; so that, in fact, it will not appear to be more than 3° broad.

431. The principal phenomena of the rainbow are all explained, on Sir Isaac Newton's principles, in the following propositions:

432. I. "When the rays of the sun fall upon a drop of rain and enter into it, some of them, after one reflection and two refractions, may come to the eye of a spectator who has his back towards the sun, and his face towards the drop."

433. If XY (*pl.* CCLVII, *fig.* 1.) is a drop of rain, and the sun shines upon it in any lines *sf*, *sd*, *sa*, &c. most of the rays will enter into the drops; some few of them only will be reflected from the first surface; those rays which are reflected from thence do not come under our present consideration, because they are never refracted at all. The greatest part of the rays then enter the drop, and those passing on to the second surface, will most of them be transmitted through the drop; but neither do those rays which are thus transmitted fall under our present consideration, since they are not reflected. For the rays, which are described in the proposition, are such as are twice refracted and once reflected. However, at the 2d surface, or hinder part of the drop at *p g*, some few rays will be reflected, while the rest are transmitted: those rays proceed in some such lines as *n r*, *n q*; and coming out of the drop in the lines *r v*, *q t*, may fall upon the eye of a spectator, who is placed anywhere in those lines, with his face towards the drop, and consequently with his back towards the sun, which is supposed to shine upon the drop in the lines *sf*, *sd*, *sa*, &c. These rays are twice refracted and once reflected; they are refracted when they pass out of the air into the drop; they are reflected from the second surface, and are refracted again when they pass out of the drop into the air.

434 II. "When rays of light reflected from a drop of rain come to the eye, those are called EFFECTUAL which are able to excite a sensation."

435. III. "When rays of light come out of a drop of rain, they will not be effectual, unless they are *parallel* and *contiguous*."

436. There are but few rays that can come to the eye at all; for since the greatest part of those rays which enter the drop XY, (*fig.* 1. *Pl.* CCLVII.) between X and *a*, pass out of the drop through the hinder surface *p g*; only few are reflected from thence, and come out through the nearer surface between *a* and *y*. Now, such rays as emerge or come out of the drop, between *a* and Y, will be ineffectual, unless they are parallel to one another, as *r v* and *q t* are; because such rays as come out, diverging from one another, will be so far asunder when they come to the eye, that all of them cannot enter the pupil; and the very few that can enter it will not be sufficient to excite any sensation. But even rays which are parallel, as *r v*, *q t*, will not be effectual, unless there are several of them contiguous or very near to one another. The two rays *r v*, *q t* alone will not be perceived, though both of them enter the eye; for so very few rays are not sufficient to excite a sensation.

437. IV. "When the rays of light come out of a drop of rain after one reflection, those will be effectual which are reflected from the same point, and which entered the drop near to one another."

438. Any rays, as *s b* and *c d* (*fig.* 2.) when they have passed out of the air into a drop of water, will be refracted towards the perpendiculars *b i*, *d l*; and as the ray *s b* falls farther from the axis *a v* than the ray *c d*, *s b* will be more refracted than *c d*; so that these rays, though parallel to one another at their incidence, may describe the lines *b e* and *d e* after refraction, and be both of them reflected from one and the same point *e*. Now all rays which are thus reflected from one and the same point, when they have described the lines *e f*, *e g*, and after reflection emerge at *f* and *g*, will be so refracted, when they pass out of the drop into the air, as to describe the lines *f h*, *g i*, parallel to one another. If these rays were to return from *e* in the lines *e b*, *e d*, and were to emerge at *b* and *d*, they would be refracted into the lines of their incidence *b s*, *d c*. But if these rays, instead of being returned in the lines *e b*, *e d*, are reflected from the same point *e* in the lines *e g*, *e f*, the lines of reflection *e g* and *e f* will be inclined both to one another, and to the surface of the drop; just as much as the lines *e b* and *e d* are. First *e b* and *e g* make just the same angle with the surface of the drop; for the angle *b e n*, which *e b* makes with the surface of the drop, is the complement of incidence, and the angle *g e v*, which *e g* makes with the surface, is the complement of reflection; and these two are equal to one another. In the same manner we might prove, that *e d* and *e f* make equal angles with the surface of the drop. 2dly, The angle *b e d* is equal to the angle *f e g*; or the reflected rays *e g*, *e f*, and the incident rays *b e*, *d e*, are equally inclined to each other. For the angle of incidence *b e l* is equal to the angle of reflection *g e l*, and the angle of incidence *d e l* is equal to the angle of reflection *f e l*; consequently the difference between the angles of incidence is equal to the difference between the angles of reflection; or *b e l* — *d e l* = *g e l* — *f e l*, or *b e d* = *g e f*. Since therefore either the lines *e g*, *e f*, or the lines *e b*, *e d*, are equally inclined both to one another, and to the surface of the drop, the rays will be refracted in the same manner, whether they were to return in the lines *e b*, *e d*, or are reflected in the lines *e g*, *e f*. But if they were to return in the lines *e b*, *e d*, the refraction, when they emerge at *b* and *d*, would make them parallel. Therefore, if they are reflected from one and the same point *e* in the lines *e g*, *e f*, the refraction, when they emerge at *g* and *f*, will likewise make them parallel.

439. But though such rays as are reflected from the same point, in the hinder part of a drop of rain, are parallel to one another when they emerge, and so have one condition that is requisite towards making them effectual, yet there is another condition necessary; for rays that are effectual must be contiguous as well as parallel. And though rays, which enter the drop in different places, may be parallel when they emerge, those only will be contiguous which enter it nearly at the same place.

440. Let XY (*fig.* 1. *Pl.* CCLVII.) be a drop of rain

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Fig. 4.

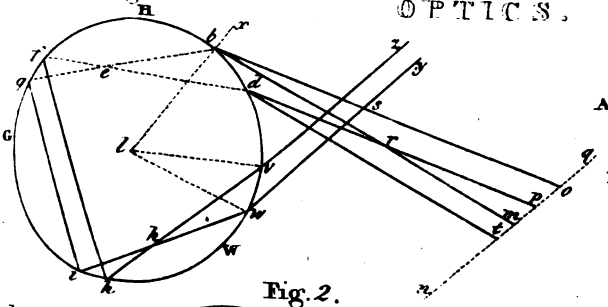


Fig. 5.

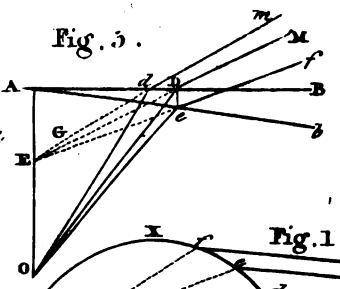


Fig. 2.

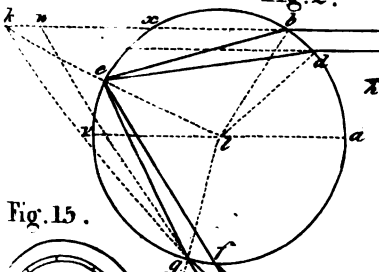


Fig. 1.

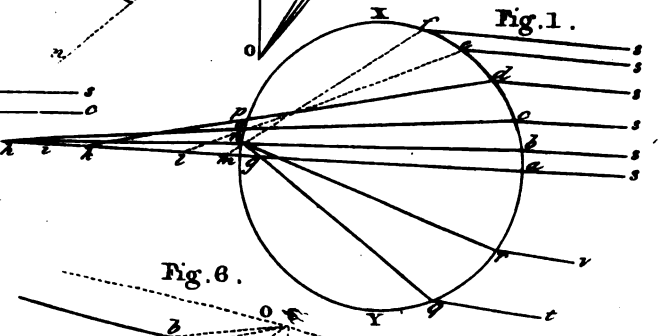


Fig. 15.

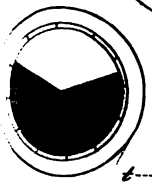


Fig. 6.

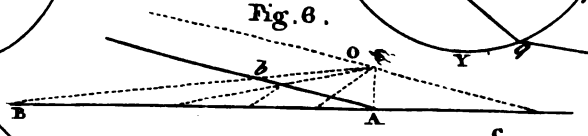


Fig. 13.

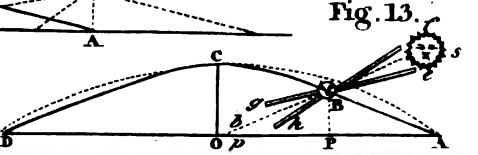


Fig. 12.

Fig. 9.

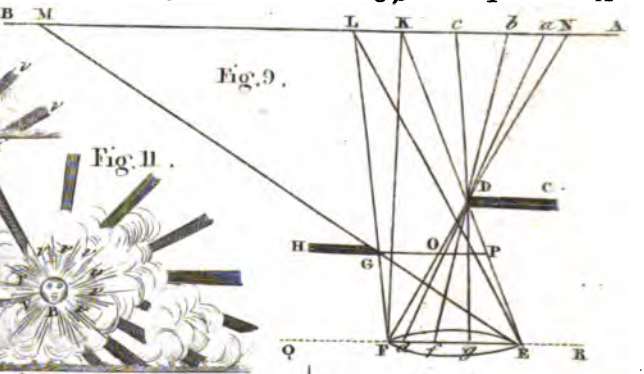


Fig. 11.

Fig. 14.

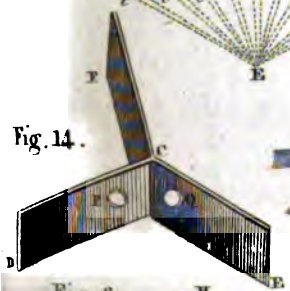


Fig. 10.

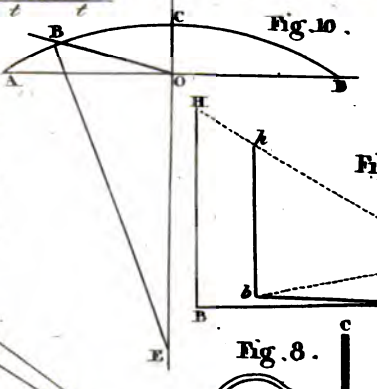


Fig. 3.

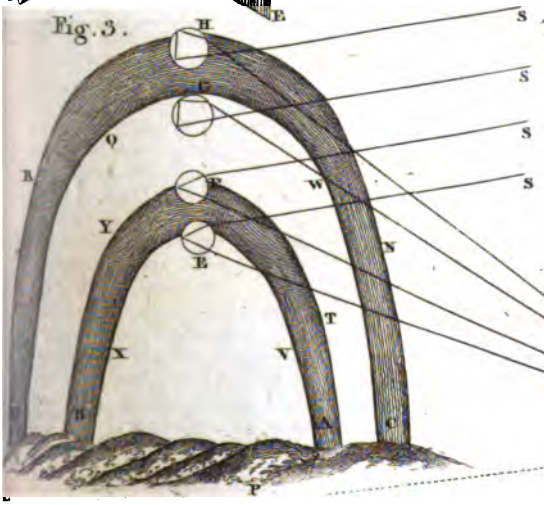


Fig. 7.

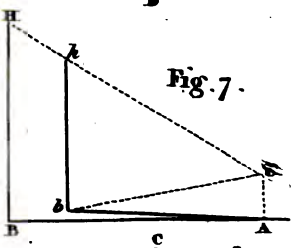
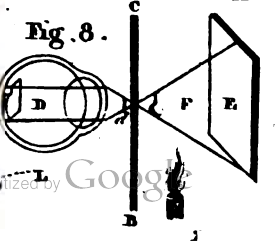


Fig. 8.



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rain, ag the axis or diameter of the drop, and sa a ray of light that comes from the sun and enters the drop at the point a. This ray sa, because it is perpendicular to both the surfaces, will pass straight through the drop in the line agb without being refracted; but any collateral rays, such as those that fall about sb, as they pass through the drop, will be made to converge to their axis, and passing out at n will meet the axis at h: rays which fall farther from the axis then sb, such as those which fall about sc, will likewise be made to converge; but then their focus will be nearer to the drop than b. Suppose therefore i to be the focus to which the rays that fall about se will converge, any ray sc, when it has described the line co within the drop and is tending to the focus i, will pass out of the drop at the point o. The rays that fall upon the drop about sd, more remote still from the axis, will converve to a focus still nearer than i, as suppose at k. These rays, therefore, go out of the drop at p. The rays, that fall still more remote from the axis, as se, will converge to a focus nearer than k, as suppose at l; and the ray se when it has described the line eo within the drop, and is tending to l, will pass out at the point o. The rays that fall still more remote from the axis will converge to a focus still nearer. Thus the ray sf will after refraction converge to a focus at m, which is nearer then l; and having described the line fn within the drop, it will pass out to the point n. Now here we may observe, that as any rays sb or sc, fall farther above the axis sa, the points n or o, where they pass out behind the drop, will be farther above g; or that, as the incident ray rises from the axis sa, the arc gno increases till we come to some ray sd, which passes out of the drop at p; and is the highest point where any ray that falls upon the quadrant or quarter ax can pass out: for any rays se, or sf, that fall higher than sd will not pass out in any point above p, but at the points o or n, which are below it. Consequently, though the arc $gnop$ increases, whilst the distance of the incident ray from the axis sa increases, till we come to the ray sd; yet afterwards the higher the ray falls above the axis sa this arc $pong$ will decrease.

441. We have hitherto spoken of the points on the hinder part of the drop, where the rays pass out of it; but this was for the sake of determining the points from whence those rays are reflected, which do not pass out behind the drop. For, in explaining the rain-bow, we have no farther reason to consider those rays which go through the drop; since they can never come to the eye of a spectator placed any where in the lines rv or qt with his face towards the drop. Now, as there are many rays which pass out of the drop between g and p, so some few rays will be reflected from thence; and consequently the several points between g and p, which are the points where some of the rays pass out of the drop, are likewise the points of reflection of the rest which do not pass out. Therefore, in respect of those rays which are reflected, we may call gp the arc of reflection; and may say, that this arc of reflection increases, as the distance of the incident ray from the axis sa increases, till we come to the ray sd; the arc of reflection is gn for the ray sb, it is $g\phi$ for the ray sc; and gp for the ray sd. But after this, as the distance of the incident ray from the axis sa increases, the arc of reflection decreases; for og less than pg is the arc of reflection for the ray so, and ng is the arc of reflection for the ray sf.

442. Hence it is obvious, that some one ray, which falls above sd, may be reflected from the same point with some other ray which falls below sd. Thus, for instance, the ray sb will be reflected from the point n, and the ray sf will be reflected from the same point; and consequently, when the reflected rays nr, nq, are refracted, as they pass out of the drop at r and q, they will be parallel, by what has been shown in the former part of this proposition. But since the intermediate rays, which enter the drop between sf and sb, are not reflected from the same point n, these two rays alone will be parallel to one another when they come out of the drop, and the intermediate rays will not be parallel to them. And consequently these rays rv, qt, though they are parallel after they emerge at r and q, will not be contiguous, and for that reason will not be effectual; the ray sd is reflected from p, which has been shown to be the limit of the arc of reflection; such rays as fall just above sd, and just below sd, will be reflected from nearly the same point p, as appears from what has been already shown. These rays therefore will be parallel, because they are reflected from the same point p; and they will likewise be contiguous, because they all of them enter the drop at one and the same place, very near to d. Consequently, such rays as enter the drop at d, and are reflected from p the limit of the arc of reflection, will be effectual; since, when they emerge at the fore part of the drop between a and y, they will be both parallel and contiguous. If we can make out that the rainbow is produced by the rays of the sun which are thus reflected from drops of rain as they fall whilst the sun shines upon them, this proposition may serve to show us, that this appearance is not produced by *any* rays that fall upon *any part*, and are reflected from any part of those drops: since this appearance cannot be produced by any rays but those which are effectual; and effectual rays must always enter each drop at one certain place in the fore part of it, and must likewise be reflected from one certain place in the hinder surface.

443. V. "When rays that are effectual emerge from a drop of rain after one reflection and two refractions, those which are most refrangible will, at their emersion, make a less angle with the incident rays than those do which are least refrangible; and by these means the rays of different colours will be separated from one another."

444. Let fh and gi (*fig.* 2, *Plate* CCLVII.) be effectual violet rays emerging from the drop at fg; and fn, gp, effectual red rays emerging from the same drop at the same place. Now, though all the violet rays are parallel to one another, because they are supposed effectual, and though all the red rays are likewise parallel to one another for the same reason; yet the violet rays will not be parallel to the red rays. These rays, as they

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have different colours, and different degrees of refrangibility, will diverge from one another; any violet ray *gi*, which emerges at *g*, will diverge from any red ray *gp*, which emerges at the same place. Now, both the violet ray *gi*, and the red ray *gp*, as they pass out of the drop of water into the air, will be refracted from the perpendicular *lo*. But the violet ray is more refrangible than the red one; and for that reason *gi*, or the refracted violet ray, will make a greater angle with the perpendicular than *gp* the refracted red ray; or the angle *igo* will be greater than the angle *pgo*. Suppose the incident ray *sb* to be continued in the direction *sk*, and the violet ray *ig* to be continued backward in the direction *ik*, till it meets the incident ray at *k*; suppose likewise the red ray *pg* to be continued backwards in the same manner, till it meets the incident ray at *w*: the angle *iks* is that which the violet ray, or most refrangible ray at its emersion, makes with the incident ray; and the angle *pws* is that which the red ray, or least refrangible ray at its emersion, makes with the incident ray. The angle *iks* is less than the angle *pws*. For, in the triangle, *gwk*, *gws*, or *pws*, is the external angle at the base, and *gkw*, or *iks* is one of the internal oppofite angles; and either internal oppofite angle is less than the external angle at the base. (Euc. b. I. prop. 16.) What has been shown to be true of the rays *gi* and *gp* might be shown, in the same manner of the rays *fh* and *fn*, or of any other rays that emerge respectively parallel to *gi* and *gp*. But all the effectual violet rays are parallel to *gi*, and all the effectual red rays are parallel to *gp*. Therefore the effectual violet rays at their emersion make a less angle with the incident ones than the effectual red ones. And for the same reason, in all the other sorts of rays, those which are most refrangible, at their emersion from a drop of rain after one reflection, will make a less angle with the incident rays than those do which are less refrangible.

445. Or otherwise: When the rays *gi* and *gp* emerge at the same point *g*, as they both come out of water into air, and consequently are refracted from the perpendicular, instead of going straight forwards in the line *eg* continued, they will both be turned round upon the point *g* from the perpendicular *go*. Now, it is easy to conceive, that either of these lines might be turned in this manner upon the point *g* as upon a centre, till they became parallel to *sb* the incident ray. But if either of these lines or rays were refracted so much from *go* as to become parallel to *sb*, the ray so much refracted would, after emersion, make no angle with *sk*, because it would be parallel to it. And consequently that ray which is most turned round upon the point *g*, or that ray which is most refrangible, will after emersion be nearest parallel to the incident ray, or will make the least angle with it. The same may be proved of all other rays emerging parallel to *gi* and *gp* respectively, or of all effectual rays; those which are most refrangible will after emersion make a less angle with the incident rays than those do which are least refrangible.

446. But since the effectual rays of different colours make different angles with *sk* at their emersion, they will be separated from one another; so that if the eye was placed in the beam *fghi*, it would receive only rays of one colour from the drop *xagv*; and if it was placed in the beam *fgnp*, it would receive only rays of some other colour. The angle *swp*, which the least refrangible or red rays make with the incident ones, when they emerge so as to be effectual, is found by calculation to be 42° 2′. And the angle *sii*, which the most refrangible rays make with the incident ones, when they emerge so as to be effectual, is found to be 40° 17′. The rays, which have the intermediate degrees of refrangibility, make with the incident ones intermediate angles between 42° 2′ and 40° 17′.

447. VI. "If a line is supposed to be drawn from the centre of the sun through the eye of the spectator, the angle which any effectual ray, after two refractions and one reflection, makes with the incident ray, will be equal to the angle which it makes with that line."

448. "Let the eye of the spectator be at *i* (*fig.* 2. *pl.* CCLVII.) and let *qt* be the line supposed to be drawn from the centre of the sun through the eye of the spectator; the angle *git*, which any effectual ray makes with this line, will be equal to the angle *iksf* which the same ray makes with the incident ray *sh* or *sk*. If *sb* is a ray coming from the centre of the sun, then, since *qt* is supposed to be drawn from the same point, these two lines, upon account of the remoteness of the point from whence they are drawn, may be looked upon as parallel to one another. But the right line *ki* crossing these two parallel lines will make the alternate angles equal. (Euc. b. I. prop. 29.) Therefore *kit* or *git* is equal to *ski*.

449. VII. "When the sun shines upon the drops of rain as they are falling, the rays that come from those drops to the eye of a spectator, after one reflection and two refractions, produce the primary rainbow."

450. If the sun shines upon the rain as it falls, there are commonly seen two bows, as AFB, CHD (*fig.* 3, *plate* CCLVII.) or if the cloud and rain do not reach over that whole side of the sky where the bows appear, then only a part of one or both bows is seen in that place where the rain falls. Of these two bows, the innermost AFB is the more vivid of the two, and this is called the *primary bow*. The outer part TFY of the primary bow is red, the inner part VEX is violet; the intermediate parts, reckoning from the red to the violet, are orange, yellow, green, blue, and indigo. Suppose the spectator's eye to be at O, and let LOP be an imaginary line drawn from the centre of the sun through the eye of the spectator; if a beam of light S coming from the sun falls upon any drop F, and the rays that emerge at F in the line FO, so as to be effectual, make an angle FOP of 42° 2′ with the line LP; then these effectual rays make an angle 42° 2′ with the incident rays, by the preceding proposition, and consequently these rays will be red, so that the drop F will appear red. All the other rays, which emerge at F, and would be effectual if they fell upon the eye, are refracted more than the red ones, and consequently will pass above the eye. If a beam of light S falls upon the drop E; and the

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the rays that emerge at E in the line EO, so as to be effectual, make an angle EOP of 40° 17′ with the line LP; then these effectual rays make likewise an angle of 40° 17′ with the incident rays, and the drop E will appear of a violet colour. All the other rays which emerge at E, and would be effectual if they came to the eye, are refracted less than the violet ones, and therefore pass below the eye. The intermediate drops between F and E will for the same reasons be of the intermediate colours.

451. Thus we have shown why a set of drops from F to E, as they are falling, should appear of the primary colours, red, orange, yellow, green, blue, indigo, and violet. It is not necessary that the several drops which produce these colours should all of them fall at exactly the same distance from the eye. The angle FOP, for instance, is the same whether the distance of the drop from the eye is OF, or whether it is in any other part of the line OF something nearer to the eye. And whilst the angle FOP is the same, the angle made by the emerging and incident rays, and consequently the colour of the drop will be the same. This is equally true of any other drop; so that, although in the figure the drops F and E are represented as falling perpendicularly one under the other, yet this is not necessary in order to produce the bow. But the coloured line FE, which we have already accounted for, is only the breadth of the bow. It still remains to be shown, why not only the drop F should appear red, but why all the other drops, quite from A to B in the arc ATFYB, should appear of the same colour. Now it is evident, that wherever a drop of rain is placed, if the angle which the effectual rays make with the line LP is equal to the angle FOP, that is, if the angle which the effectual rays make with the incident rays is 42° 2′, any of those drops will be red, for the same reason that the drop F is of this colour.

452. If FOP was to turn round upon the line OP, so that one end of this line should always be at the eye, and the other be at P opposite to the sun; such a motion of this figure would be like that of a pair of compasses turning round upon one of the legs OP with the opening FOP. In this revolution the drop F would describe a circle; P would be the centre, and ATFYB would be an arc in this circle. Now, since, in this motion of the line and drop OF, the angle made by FO with OP, that is, the angle FOP, continues the same; if the sun was to shine upon this drop as it revolves, the effectual rays would make the same angle with the incident rays, in whatever part of the arc ATFYB the drop was to be. Therefore, whether the drop is at A, or at T, or at Y, or at B, or wherever else it is in this whole arc, it would appear red as it does at F. The drops of rain, as they fall, are not indeed turned round in this manner; but then, as vast numbers of them are falling at once in right lines from the cloud, whilst one drop is at F, there will be others at Y, at T, at B, at A, and in every other part of the arc ATFYB; and all these drops will be red for the same reason that the drop F would have been red, if it had been in the same place. Therefore, when the sun shines upon the rain as it falls, there will be a red arc ATFYB opposite to the sun. In the same manner, because the drop E is violet, we might prove that any other drop, which whilst it is falling is in any part of the arc AVEXB, will be violet; and consequently, at the same time that the red arc ATFYB appears, there will likewise be a violet arc AVEXB below or within it. FE is the distance between these two coloured arcs; and from what has been said, it follows, that the intermediate space between these two arcs will be filled up with arcs of the intermediate colours, orange, yellow, blue, green, and indigo. All these coloured arcs together make up the primary rainbow.

453. VIII. "The PRIMARY RAINBOW is never a greater arc than a semicircle."

454. SINCE the line LOP is drawn from the sun through the eye of the spectator, and since P (*fig.* 1. *pl.* CCLVII.) is the centre of the rainbow, it follows, that the centre of the rainbow is always opposite to the sun. The angle FOP is an angle of 42° 2′, as was observed, or F, the highest part of the bow, is 42° 2′ from P the centre of it. If the sun is more than 42° 2′ high, P the centre of the rainbow, which is opposite to the sun, will be more than 42° 2′ below the horizon; and consequently F, the top of the bow, which is only 42° 2′ from P, will be below the horizon; that is, when the sun is more than 42° 2′ high, no primary rainbow will be seen. If the sun is something less than 42° 2′ high, then P will be something less than 42° 2′ below the horizon; and consequently F, which is only 42° 2′ from P, will be just above the horizon; that is, a small part of the bow at this height of the sun will appear close to the ground opposite to the sun. If the sun is 20° high, then P will be 20° below the horizon; and F, the top of the bow, being 42° 2′ from P, will be 22° 2′ above the horizon; therefore, at this height of the sun, the bow will be an arc of a circle whose centre is below the horizon; and consequently that arc of the circle which is above the horizon or the bow, will be less than a semicircle. If the sun is in the horizon, then P, the centre of the bow, will be in the opposite part of the horizon; F, the top of the bow, will be 42° 2′ above the horizon; and the bow itself, because the horizon passes through the centre of it, will be a semicircle. More than a semicircle can never appear; because, if the bow was more than a semicircle, P the centre of it must be above the horizon; but P is always opposite to the sun, therefore P cannot be above the horizon, unless the sun is below it; and when the sun is set, or is below the horizon, it cannot shine upon the drops of rain as they fall; and consequently, when the sun is below the horizon, no bow at all can be seen.

455. IX. "When the rays of the sun fall upon a drop of rain, some of them, after two reflections and two refractions, may come to the eye of a spectator, who has his back towards the sun, and his face towards the drop."

456. IF HGW (*fig.* 4. *pl.* CCLVII.) is a drop of rain, and parallel rays coming from the sun, as $z v$, $y w$, fall upon the lower part of it, they will

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be refracted towards the perpendiculars $v\,l$, $w\,l$, as they enter into it, and will deſcribe ſome ſuch lines as $v\,h$, $w\,i$. At h and i great part of theſe rays will paſs out of the drop; but ſome of them will be reflected from thence in the lines $b\,f$, $i\,g$. At f and g again, great part of the rays that were reflected thither will paſs out of the drop; but theſe rays will not come to the eye of a ſpectator at o. However, here again all the rays will not paſs out; but ſome few will be reflected from f and g, in ſome ſuch lines as $f\,d$, $g\,h$; and theſe, when they emerge out of the drop of water into the air at b and d, will be refracted from the perpendiculars, and, deſcribing the lines $d\,t$, $b\,o$, may come to the eye of the ſpectator, who has his back towards the ſun, and his face towards the drop.

457. X. "Thoſe rays, which are parallel to one another after they have been once refracted, and once reflected in a drop of rain, will be effectual when they emerge, after two refractions and two reflections."

458. No rays can be effectual unleſs they are contiguous and parallel. From what was ſaid, it appears, that when rays come out of a drop of rain contiguous to one another, either after one or after two reflections, they muſt enter the drop nearly at one and the ſame place. And if ſuch rays as are contiguous are parallel after the firſt reflection, they will emerge parallel, and therefore will be effectual. Let $z\,v$ and $y\,w$ be contiguous rays which come from the ſun, and are parallel to one another when they fall upon the lower part of the drop; ſuppoſe theſe rays to be refracted at v and w, and to be reflected at b and i; if they are parallel to one another, as $b\,f$, $g\,i$, after this firſt reflection, then, after they are reflected a ſecond time from f and g, and refracted a ſecond time as they emerge at d and b, they will go out of the drop parallel to one another in the lines $d\,t$ and $b\,o$, and will therefore be effectual. The rays $z\,v$, $y\,w$, are refracted towards the perpendiculars $v\,l$, $w\,l$, when they enter the drop and will be made to converge. As theſe rays are very oblique, their focus will not be far from the ſurface $w\,w$. If this focus is at k, the rays, after they have paſſed the focus, will diverge from thence in the directions $k\,h$, $k\,i$; and if $k\,i$ is the principal focal diſtance of the concave reflecting ſurface $h\,i$, the reflected rays $h\,f$, $i\,g$ will be parallel. Theſe rays $e\,f$, $i\,g$ are reflected again from the concave ſurface $f\,g$, and will meet in a focus at e, ſo that $g\,e$ will be the principal focal diſtance of this reflecting ſurface $f\,g$. And becauſe $h\,i$ and $f\,g$ are parts of the ſame ſphere, the principal focal diſtances $g\,e$ and $k\,i$ will be equal to one another. When the rays have paſſed the focus e, they will diverge from thence in the lines $e\,d$, $e\,b$; and we are to ſhow, that when they emerge at d and b, and are refracted there, they will become parallel.

459. Now, if the rays $v\,k$, $w\,k$, when they have met at k, were to be turned back again in the directions $k\,v$, $k\,w$, and were to emerge at v and w, they would be refracted into the lines of their incidence, $v\,z$, $w\,y$, and therefore would be parallel. But ſince $g\,e$ is equal to $i\,k$, as has already been ſhown, the rays $e\,d$, $e\,b$, that diverge from e, fall in the ſame manner upon the drop at d and b, as the rays $k\,v$, $k\,w$, would fall upon it at v and w; and $e\,d$, $e\,b$, are juſt as much inclined to the refracting ſurface $d\,b$ as $k\,v$, $k\,w$ would be to the ſurface $v\,w$. From hence it follows, that the rays $e\,d$, $e\,b$, emerging at d and b, will be refracted in the ſame manner, and will have the ſame direction in reſpect of one another, as $k\,v$, $k\,w$ would have. But $k\,v$ and $k\,w$ would be parallel after refraction. Therefore $e\,d$ and $e\,b$ will emerge in lines $d\,p$, $b\,o$, ſo as to be parallel to one another, and conſequently ſo as to be effectual.

460. XI. "When rays that are effectual emerge from a drop of rain after two reflections and two refractions, thoſe which are moſt refrangible will at their emerſion make a greater angle with the incident rays than thoſe do which are leaſt refrangible; and by this means the rays of different colours will be ſeparated from one another."

461. If the rays of different colours, which are differently refrangible, emerge at any point b (*fig.* 4. *pl.* CCLVII.) theſe rays will not be all of them equally refracted from the perpendicular. Thus, if $b\,o$ is a red ray, which is of all others the leaſt refrangible, and $b\,m$ is a violet ray, which is of all others the moſt refrangible; when theſe two rays emerge at b, the violet ray will be refracted more from the perpendicular $b\,x$ than the red ray, and the refracted angle $x\,b\,m$ will be greater than the refracted angle $x\,b\,o$. Hence it follows, that theſe two rays, after emerſion, will diverge from one another. In like manner, the rays that emerge at d will diverge from one another; a red ray will emerge in the line $d\,p$, a violet ray in the line $d\,t$. So that, though all the effectual red rays of the beam $b\,d\,m\,t$ are parallel to one another, and all the effectual red rays of the beam $b\,d\,o\,p$ are likewiſe parallel to one another, yet the violet rays will not be parallel to the red ones, but the violet beam will diverge from the red beam. Thus the rays of the different colours will be ſeparated from one another.

462. This will appear farther, if we conſider what the propoſition affirms, That any violet or moſt refrangible ray will make a greater angle with the incident rays than any red or leaſt refrangible ray makes with the ſame incident rays. Thus, if $y\,w$ is an incident ray, $b\,m$ a violet ray emerging from the point b, and $b\,o$ a red ray emerging from the ſame point, the angle which the violet ray makes with the incident one is $y\,r\,m$, and that which the red ray makes with it is $y\,s\,o$. Now $y\,r\,m$ is a greater angle than $y\,s\,o$; for in the triangle $b\,r\,s$, the internal angle $b\,r\,s$ is leſs than $b\,s\,y$ the external angle at the baſe. (Eucl. B. I, prop. 16.) But $y\,r\,m$ is the complement of $b\,r\,s$ or of $b\,r\,y$ to two right ones, and $y\,s\,o$ is the complement of $b\,s\,y$ to two right ones. Therefore, ſince $b\,r\,y$ is leſs than $b\,s\,y$, the complement of $b\,r\,y$ to two right angles will be greater then the complement of $b\,s\,y$ to two right angles; or $y\,r\,m$ will be greater than $y\,s\,o$. Or otherwiſe: Both the rays $b\,o$ and $b\,m$, when they are refracted in paſſing out of the drop at b, are turned round upon the point b from the perpendicular $b\,x$. Now either of theſe lines $b\,o$ or $b\,m$ might be turned round in this manner, till it made a right angle with $y\,w$. Conſequently,

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quently that ray which is moſt turned round upon *b*, or which is moſt refracted, will make an angle with *y w* that will be nearer to a right one, than that ray makes with it which is leaſt turned round upon *b*, or which is leaſt refracted. Therefore that ray which is moſt refracted will make a greater angle with the incident ray than that which is leaſt refracted.

463. But ſince the emerging rays, as they are differently refrangible, make different angles with the ſame incident ray *y w*, the refraction which they ſuffer at emerſion will ſeparate them from one another. The angle *y r m*, which the moſt refrangible or violet rays make with the incident ones, is found by calculation to be 54° 7′; and the angle *y s o*, which the leaſt refrangible or red rays make with the incident ones, is found to be 50° 57′: the angles which the rays or the intermediate colours, indigo, blue green, yellow, and orange, make with the incident rays, are intermediate angles between 54° 7′ and 50° 57′.

464. XII. "If a line is ſuppoſed to be drawn from the centre of the ſun through the eye of the ſpectator; the angle which, after two refractions and two reflections, any effectual ray makes with the incident ray, will be equal to the angle which it makes with that line."

465. If *y w* (*Pl.* CCLVII. *fig.* 4.) is an incident ray, *b o*, an effectual ray, and *q n* a line drawn from the centre of the ſun through *o* the eye of the ſpectator; the angle *y s o*, which the effectual ray makes with the incident ray, is equal to *s o n*, the angle which the ſame effectual ray makes with the line *q n*. For *y w* and *q n*, conſidered as drawn from the centre of the ſun, are parallel; *b o* croſſes them, and conſequently makes the alternate angles *y s o*, *s o n*, equal to one another. Euc. B. I. Pr. 29.

466. XIII. "When the ſun ſhines upon the drops of rain as they are falling, the rays that come from theſe drops to the eye of a ſpectator, after two reflections and two refractions, produce the ſecondary rainbow."

467. The ſecondary rainbow is the outermoſt; CHD, *fig.* 3. When the ſun ſhines upon a drop of rain H; and the rays HO, which emerge at H ſo as to be effectual, make an angle HOP of 54° 7′ with LOP a line drawn from the ſun through the eye of the ſpectator; the ſame effectual rays will make likewiſe an angle of 54° 7′ with the incident rays S, and the rays which emerge at this angle are violet ones, by what was obſerved above. Therefore, if the ſpectator's eye is at O, none but violet rays will enter it: for as all the other rays make a leſs angle with OP, they will fall above the ſpectator's eye. In like manner, if the effectual rays that emerge from the drop G make an angle of 54° 57′ with the line OP, they will likewiſe make the ſame angle with the incident rays S; and conſequently, from the drop G to the ſpectator's eye at O, no rays will come but red ones; for all the other rays, making a greater angle with the line OP, will fall below the eye at O. For the ſame reaſon, the rays emerging from the intermediate drops between H and G, and coming to the ſpectator's eye at O, will emerge at intermediate angles, and therefore will have the intermediate colours. Thus, if there are ſeven drops from H to G inclusively, their colours will be violet, indigo, blue, green, yellow, orange, and red. This coloured line is the breadth of the ſecondary rainbow.

468. Now, if HOP was to turn round upon the line OP, like a pair of compaſſes upon one of the legs OP with the opening HOP, it is plain from the ſuppoſition, that, in ſuch a revolution of the drop H, the angle HOP would be the ſame, and conſequently the emerging rays would make the ſame angle with the incident ones. But in ſuch a revolution the drop would deſcribe a circle of which P would be the centre, and CNHRD an arc. Conſequently, ſince, when the drop is at N, or at R, or anywhere elſe in that arc, the emerging rays make the ſame angle with the incident ones, as when the drop is at H, the colour of the drop will be the ſame to an eye placed at O, whether the drop is at N, or at H, or at R, or anywhere elſe in that arc. Now, though the drop does not thus turn round as it falls, and does not paſs through the ſeveral parts of this arc, yet, ſince there are drops of rain falling everywhere at the ſame time, when one drop is at H, there will be another at R, another at N, and others in all parts of the arc; and theſe drops will all of them be violet-coloured, for the ſame reaſon that the drop H would have been of this colour if it had been in any of thoſe places. In like manner, as the drop G is red when it is at G, it would likewiſe be red in any part of the arc CWGQD; and ſo will any other drop, when, as it is falling, it comes to any part of that arc. Thus, as the ſun ſhines upon the rain whilſt it falls, there will be two arcs produced, a violet coloured one CNHRD, and a red one CWGQD; and for the ſame reaſons the intermediate ſpace between theſe two arcs will be filled up with arcs of the intermediate colours. All theſe arcs together make up the ſecondary rainbow.

469. XIV. "The colours of the ſecondary rainbow are fainter than thoſe of the primary rainbow; and are ranged in the contrary order."

470. The primary rainbow is produced by ſuch rays as have been only once reflected; the ſecondary rainbow is produced by ſuch rays as have been twice reflected. But at every reflection ſome rays paſs out of the drop of rain without being reflected; ſo that the oftener the rays are reflected the fewer of them are left. Therefore the colours of the ſecondary bow are produced by fewer rays, and conſequently will be fainter, than the colours of the primary bow. In the primary bow, reckoning from the outſide of it, the colours are ranged in this order; red, orange, yellow, green, blue, indigo, violet. In the ſecondary bow, reckoning from the outſide, the colours are violet, indigo, blue, green, yellow, orange, red. So that the red, which is the outermoſt or higheſt colour in the primary bow, is the innermoſt or loweſt colour in the ſecondary one.

471. Now the violet rays, when they emerge ſo as to be effectual after one reflection, make a leſs angle with the incident rays than the red ones; conſequently the violet rays make a leſs angle with the lines OP (*Pl.* CCLVII, *fig.* 3.) than the red ones. But, in the primary rainbow, the rays are only

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only once reflected, and the angle which the effectual rays make with OP is the distance of the coloured drop from P the centre of the bow. Therefore the violet drops, or violet arc, in the primary bow, will be nearer to the centre of the bow than the red drops or red arc; that is, the innermost colour in the primary bow will be violet, and the outermost colour will be red. And, for the same reason, through the whole primary bow, every colour will be nearer to the centre P, as the rays of that colour are more refrangible. But the violet rays, when they emerge so as to be effectual after two reflections, make a greater angle with the incident rays than the red ones; consequently the violet rays will make a greater angle with the line OP than the red ones. But in the secondary rainbow the rays are twice reflected, and the angle which effectual rays make with OP is the distance of the coloured drop from P the centre of the bow. Therefore the violet drops or violet arc in the secondary bow will be farther from the centre of the bow than the red drops or red arc; that is, the outermost colour in the secondary bow will be violet, and the innermost colour will be red. And, for the same reason, through the whole secondary bow, every colour will be further from the centre P, as the rays of that colour are more refrangible.

§ 2. *Of* HALOES, PARHELIA, &c.

472. Under the articles HALO and PARHELION will be found a pretty full account of the different hypotheses concerning these phenomena, and likewise of the method by which these hypotheses are supported, from the known laws of refraction and reflection; to which therefore we refer, to avoid repetition.

§ 3. *Of the* APPARENT PLACE, DISTANCE, MAGNITUDE, *and* MOTION *of* OBJECTS.

473. PHILOSOPHERS in general had taken for granted, that the place to which the eye refers any visible object seen by reflection or refraction, is that in which the visual ray meets a perpendicular from the object upon the reflecting or refracting plane. But this method of judging of the place of objects was called in question by Dr BARROW, who contended that the arguments brought in favour of the opinion were not conclusive. These arguments are, that the images of objects appear straight in a plane mirror, but curved in a convex or concave one: that a straight thread, when partly immersed perpendicularly in water, does not appear crooked as when it is obliquely plunged into the fluid; but that which is within the water seems to be a continuation of that which is without. With respect to the reflected image, however, of a perpendicular right line from a convex or concave mirror, he says, that it is not easy for the eye to distinguish the curve that it really makes; and that, if the appearance of a perpendicular thread, part of which is plunged in water, be closely attended to, it will not favour the common hypothesis. If the thread is of any shining metal, as silver, and viewed obliquely, the image of the part immersed will appear to detach itself sensibly from that part which is without the water, so that it cannot be true that every object appears to be in the same place where the refracted ray meets the perpendicular; and the same observation, he thinks, may be extended to the case of reflection. The Dr says, we refer every point of an object to the place from which the pencils of light, that give us the image of it, issue, or from which they would have issued if no reflecting or refracting substance intervened. Pursuing this principle, he proceeds to investigate the place in which the rays issuing from each of the points of an object, and which reach the eye after one reflection or refraction, meet; and he found, that if the refracting surface was plane, and the refraction was made from a denser medium into a rarer, those rays would always meet in a place between the eye and a perpendicular to the point of incidence. If a convex mirror be used, the case will be the same; but if the mirror be plane, the rays will meet in the perpendicular, and beyond it if it be concave. He also determined, according to these principles, what form the image of a right line will take, when it is presented in different manners to a spherical mirror, or when it is seen through a refracting medium.

474. Probable as Dr BARROW thought the maxim which he endeavoured to establish concerning the supposed place of visible objects, he mentions an objection to it, and acknowledges that he was not able to give a satisfactory solution of it. It is this: Let an object be placed beyond the focus of a convex lens; and if the eye be close to the lens, it will appear confused, but very near to its true place. If the eye be a little withdrawn, the confusion will increase, and the object will seem to come nearer; and when the eye is very near the focus, the confusion will be exceedingly great, and the object will seem to be close to the eye. But in this experiment the eye receives no rays but those that are converging; and the point from which they issue is so far from being nearer than the object, that it is beyond it; notwithstanding which, the object is conceived to be much nearer than it is, though no very distinct idea can be formed of its precise distance. It may be observed, that in reality, the rays falling upon the eye in this case in a manner quite different from that in which they fall upon it in other circumstances, we can form no judgment about the place from which they issue. This subject was afterwards taken up by Berkeley, Smith, Montucla, and others.

475. M. DE LA HIRE made several valuable observations concerning the distance of visible objects, and various other phenomena of vision, which are well worth notice. He also took particular pains to ascertain the manner in which the eye conforms itself to the view of objects placed at different distances. He enumerates five circumstances, which assist us in judging of the distance of objects, namely, their apparent magnitude, the strength of the colouring, the direction of the two eyes, the parallax of the objects, and the distinctness of their small parts. Painters, he says, can only take advantage of the two first mentioned circumstances, and therefore pictures can never perfectly deceive the eye; but in the decorations of theatres, they make use of them all. The size of objects, and the strength of their colouring, are diminished in proportion to the distance at which they are intended to appear. Parts of the

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ſame object which are to appear at different diſtances, as columns in an order of architecture, are drawn upon different planes, a little removed from one another, that the two eyes may be obliged to change their direction, to diſtinguiſh the parts of the nearer plane from thoſe of the more remote. The ſmall diſtance of the planes ſerves to make a ſmall parallax, by changing the poſition of the eye; and as we do not preſerve a diſtinct idea of the quantity of parallax, correſponding to the different diſtances of objects, it is ſufficient that we perceive there is a parallax, to be convinced that theſe planes are diſtant from one another, without determining what that diſtance is; and as to the laſt circumſtance, viz. the diſtinctneſs of the ſmall parts of objects, it is of no uſe in diſcovering the deception, on account of the falſe light that is thrown upon theſe decorations.

476. To theſe obſervations concerning deceptions of ſight, we ſhall add a ſimilar one of M. LE CAT, who took notice that the reaſon why we imagine objects to be larger when they are ſeen through a miſt, is the dimneſs or obſcurity with which they are then ſeen; this circumſtance being aſſociated with the idea of great diſtance. This he ſays is confirmed by our being ſurpriſed to find upon approaching ſuch objects, that they are ſo much nearer to us, as well as ſo much ſmaller, than we had imagined.

477. M. DE LA HIRE mentions one caſe which is of difficult ſolution. It is when a candle, in a dark place, and ſituated beyond the limits of diſtinct viſion, is viewed through a very narrow chink in a card; in which caſe a conſiderable number of candles, ſometimes ſo many as ſix, will be ſeen along the chink. This appearance he aſcribes to ſmall irregularities in the ſurface of the humours of the eye, the effect of which is not ſenſible when rays are admitted into the eye through the whole extent of the pupil, and conſequently one principal image effaces a number of ſmall ones; whereas, in this caſe, each of them is formed ſeparately, and no one of them is ſo conſiderable as to prevent the others from being perceived at the ſame time.

478. There are few perſons, M. De la Hire obſerves, who have both their eyes perfectly equal, not only with reſpect to the limits of diſtinct viſion, but alſo with reſpect to the colour with which objects appear tinged when they are viewed by them, eſpecially if one of the eyes has been expoſed to the impreſſion of a ſtrong light. To compare them together in this reſpect, he directs us to take two thin cards, and to make in each of them a round hole of $\frac{1}{3}$ or $\frac{1}{4}$ of a line in diameter, and, applying one of them to each of the eyes, to look through the holes on a white paper, equally illuminated; when a circle of the paper will appear to each of the eyes, and, placing the cards properly, theſe two circles may be made to touch one another, and thereby the appearance of the ſame object to each of the eyes may be compared to the greateſt advantage. To make this experiment with the greateſt exactneſs, it is neceſſary, he ſays, that the eyes be kept ſhut ſome time before the cards be applied to them.

479. M. DE LA HIRE firſt endeavoured to explain the cauſe of thoſe dark ſpots which ſeem to float before the eyes, eſpecially thoſe of old people. They are moſt viſible when the eyes are turned towards an uniformly white object, as the ſnow in the open fields. If they be fixed when the eye is ſo, this philoſopher ſuppoſed that they were occaſioned by extravaſated blood upon the retina. But he thought that the moveable ſpots were occaſioned by opaque matter floating in the aqueous humour of the eye. He thought the vitreous humour was not ſufficiently limpid for this purpoſe.

480. By the following calculation, M. De la Hire gives us an idea of the extreme ſenſibility of the optic nerves. One may ſee very eaſily, at the diſtance of 4000 toiſes, the ſail of a wind-mill, 6 feet in diameter; and the eye being ſuppoſed to be an inch in diameter, the picture of this ſail, at the bottom of the eye, will be one eight thouſandth of an inch, which is leſs than the 666th part of a line, and is about the 66th part of a common hair, on the 8th part of a ſingle thread of ſilk. So ſmall, therefore, muſt one of the fibres of the optic nerve be, which he ſays is almoſt inconceivable, ſince each of theſe fibres is a tube that contains ſpirits. If birds perceive diſtant objects as well as men, which he thinks very probable, he obſerves that the fibres of their optic nerves muſt be much finer than ours.

481. Dr BERKELEY, biſhop of Cloyne, in his *Eſſay towards a New Theory of Viſion*, obſerves, that the circle formed upon the retina, by the rays which do not come to a focus, produce the ſame confuſion in the eye, whether they croſs one another before they reach the retina, or tend to do it afterwards; and therefore that the judgment concerning diſtance will be the ſame in both caſes, without any regard to the place from which the rays originally iſſued; ſo that in this caſe, as, by receding from the lens, the confuſion which always accompanies the nearneſs of an object increaſes, the mind will judge that the object comes nearer. But, ſays Dr SMITH, if this be true, the object ought always to appear at a leſs diſtance from the eye than that at which objects are ſeen diſtinctly, which is not the caſe; and to explain this appearance, as well as every other in which a judgment is formed concerning diſtance, he maintains, that we judge of it by the apparent magnitude of objects only, or chiefly; ſo that, ſince the image grows larger as we recede from the lens through which it is viewed, we conceive the objects to come nearer. He alſo endeavours to ſhow, that in all caſes in which glaſſes are uſed, we judge of diſtance by the ſame ſimple rule; from which he concludes univerſally, that the apparent diſtance of an object ſeen in a glaſs is to its apparent diſtance ſeen by the naked eye, as the apparent magnitude to the naked eye is to its apparent magnitude in the glaſs.

482. But that we do not judge of diſtance merely by the angle under which objects are ſeen, is an obſervation as old as ALHAZEN, who mentions ſeveral inſtances, in which, though the angles under which objects appear to be different, the magnitudes are univerſally and inſtantaneouſly deemed not to be ſo. And Mr ROBINS clearly ſhows the hypotheſis of Dr Smith to be contrary

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to

to fact in the moſt common and ſimple caſes. In microſcopes, he ſays, it is impoſſible that the eye ſhould judge the object to be nearer than the diſtance at which it has viewed the object itſelf, in proportion to the degree of magnifying. For when the microſcope magnifies much, this rule would place the image at a diſtance, of which the ſight cannot poſſibly form any opinion, as being an interval from the eye at which no object can be ſeen. In general, he believes, that whoever looks at an object through a convex glaſs, and then at the object itſelf without the glaſs, will find it to appear nearer in the latter caſe, though it be magnified in the glaſs; and in the ſame trial with the concave glaſs, though by the glaſs the object be diminiſhed, it will appear nearer through the glaſs than without it. But the moſt convincing proof, that the apparent diſtance of the image is not determined by its apparent magnitude, is the following experiment: If a double convex glaſs be held upright before ſome luminous object, as a candle, there will be ſeen two images, one erect, and the other inverted. The firſt is made ſimply by reflection from the neareſt ſurface, the ſecond by reflection from the farther ſurface, the rays undergoing a refraction from the firſt ſurface both before and after the reflection. If this glaſs has not too ſhort a focal diſtance when it is held near the object, the inverted image will appear larger than the other, and alſo nearer; but if the glaſs be carried off from the object, though the eye remain as near to it as before, the inverted image will diminiſh ſo much faſter than the other, that, at length, it will appear very much leſs than it, but ſtill nearer. Here, ſays Mr Robins, two images of the ſame object are ſeen under one view, and their apparent diſtances immediately compared; and here, it is evident, that thoſe diſtances have no neceſſary connection with the apparent magnitude. He alſo ſhows how this experiment may be made ſtill more convincing, by ſticking a piece of paper on the middle of the lens and viewing it through a ſhort tube.

483. M. BOUGUER adopts the general maxim of Dr BARROW, in ſuppoſing that we refer objects to the place from which the pencils of rays ſeemingly converge at their entrance into the pupil. But when rays iſſue from below the ſurface of a veſſel of water or any other refracting medium, he finds that there are always two different places of this ſeeming convergence; one of them of the rays that iſſue from it in the ſame vertical circle, and therefore fall with different degrees of obliquity upon the ſurface of the refracting medium; and another, of thoſe that fall upon the ſurface with the ſame degree of obliquity, entering the eye laterally with reſpect to one another. Sometimes, he ſays, one of theſe images is attended to by the mind, and ſometimes the other, and different images may be obſerved by different perſons. An object plunged in water, affords an example, he ſays, of this duplicity of images. If BA*b* (*Plate* CCLVII, *fig.* 5.) be part of the ſurface of water, and the object be at O, there will be two images of it in two different places; one at G, on the cauſtic by refraction, and the other at E, in the perpendicular AO, which is as much a cauſtic as the other line. The former image is viſible by the rays ODM, O*d m*, which are one higher than the other, in their progreſs to the eye; whereas the image at E is made by the rays ODM, O*e f*, which enter the eye laterally. This, ſays he, may ſerve to explain the difficulty of F. Tacquet, Barrow, Smith, and many other authors, and which Newton himſelf conſidered as a very difficult problem, though it might not be abſolutely inſoluble.

484. G. W. KRAFT has ably ſupported the opinion of Dr Barrow, that the place of any point, ſeen by reflection from the ſurface of any medium, is that in which rays iſſuing from it, infinitely near to one another, would meet; and conſidering the caſe of a diſtant object viewed in a concave mirror, by an eye very near to it, when the image, according to Euclid and other writers, would be between the eye and the object, and the rule of Dr Barrow cannot be applied; he ſays that in this caſe the ſpeculum may be conſidered as a plane, the effect being the ſame, only the image is more obſcure.

485. Dr PORTERFIELD gives a diſtinct and comprehenſive view of the natural methods of judging concerning the diſtance of objects. The conformation of the eye, he ſays, can be of no uſe to us with reſpect to objects that are placed without the limits of diſtinct viſion. As the object, however, does then appear more or leſs confuſed, according as it is more or leſs removed from thoſe limits, this confuſion aſſiſts the mind in judging of the diſtance of the object; it being always eſteemed ſo much the nearer, or the farther off, by how much the confuſion is leſs or greater. But this confuſion hath its limits alſo, beyond which it can never extend; for when an object is placed at a certain diſtance from the eye, to which the breadth of the pupil bears no ſenſible proportion, the rays of light that come from a point in the object, and paſs the pupil, are ſo little diverging, that they may be conſidered as parallel. For a picture on the retina will not be ſenſibly more confuſed, though the object be removed to a much greater diſtance. The moſt univerſal, and the moſt ſure means of judging of the diſtance of objects is, he ſays, the angle made by the optic axis. For our two eyes are like two different ſtations, by the aſſiſtance of which diſtances are taken: and this is the reaſon why thoſe perſons who are blind of one eye ſo frequently miſs their mark in pouring liquor into a glaſs, ſnuffing a candle, and ſuch other actions, as require that the diſtance be exactly diſtinguiſhed. To prove the uſefulneſs of this method of judging of the diſtance of objects, he directs to ſuſpend a ring in a thread, ſo that its ſide may be towards us, and the hole in it to the right and left hand; and taking a ſmall rod, crooked at the end, retire from the ring 2 or 3 paces, and having with one hand covered one of our eyes, to endeavour with the other to paſs the crooked end of the rod through the ring. This, ſays he, appears very eaſy; and yet, upon trial, perhaps we ſhall not ſucceed once in 100 times, eſpecially if we move the rod a little quickly. The uſe of this ſecond method of judging of diſtances De Chales limited to 120 feet; beyond which, he ſays, we are not ſenſible of any difference in the angle of the optic axis.

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486. A 3d method of judging of the distance of objects, consists in their apparent magnitudes, on which so much stress was laid by Dr SMITH. From this change in the magnitude of the image upon the retina, we easily judge of the distance of objects, as often as we are otherwise acquainted with the magnitude of the objects themselves; but as often as we are ignorant of the real magnitude of bodies, we can never, from their apparent magnitude, form any judgment of their distance. From this we may see why we are so frequently deceived in our estimates of distance, by any extraordinary magnitudes of objects seen at the end of it; as, in travelling towards a large city, or a castle, or a cathedral church, or a mountain larger than ordinary, we fancy them to be nearer than we find them to be. This also is the reason why animals, and all small objects, seen in valleys, contiguous to large mountains, appear exceedingly small, because both appear nearer to us than they really are.

487. Dr JURIN clearly accounts for our imagining objects, when seen from a high building, to be smaller than they are, and smaller than we fancy them to be when we view them at the same distance on level ground. It is, says he, because we have no distinct idea of distance in that direction, and therefore judge of things by their pictures upon the eye only: but custom will enable us to judge rightly even in this case. Let a boy, says he, who has never been upon any high building, go to the top of the monument, and look down into the street; the objects seen there, as men and horses, will appear so small as greatly to surprise him. For this reason, statues placed upon very high buildings ought to be made of a larger size than those which are seen at a nearer distance; because all persons, except architects, are apt to imagine the height of such buildings to be much less than it really is.

488. The 4th method by which Dr PORTERFIELD says that we judge of the distance of objects, is the force with which their colour strikes our eyes. For if we be assured that two objects are of a similar and like colour, and that one appears more bright and lively than the other, we judge that the brighter object is the nearer of the two.

489. The 5th method consists in the different appearance of the small parts of objects. When these parts appear distinct, we judge that the object is near; but when they appear confused, or when they do not appear at all, we judge that it is at a greater distance. For the image of any object, or part of an object, diminishes as the distance of it increases.

490. The 6th and last method by which we judge of the distance of objects is, that the eye does not represent to our mind one object alone, but at the same time all those that are placed betwixt us and the principal object, whose distance we are considering; and the more this distance is divided into separate and distinct parts, the greater it appears to be. For this reason, distances upon uneven surfaces appear less than upon a plane: for the inequalities of the surfaces, such as hills, and holes, and rivers, that lie low and out of sight, either do not appear, or hinder the parts that lie behind them from appearing; and so the whole apparent distance is diminished by the parts that do not appear in it. This is the reason that the banks of a river appear contiguous to a distant eye, when the river is low and not seen. For the same reason a large lake, or an arm of the sea, such as the Frith of Forth, appears to be much narrower, than an equal extent of level ground, diversified with houses, fields, plantations, &c.

491. Dr PORTERFIELD very well explains several fallacies in vision depending upon our mistaking the distances of objects. Of this kind, he says, is the appearance of parallel lines, and long vistas consisting of parallel rows of trees; for they seem to converge more and more as they are farther extended from the eye. The reason of this, he says, is because the apparent magnitudes of their perpendicular intervals are perpetually diminishing, while, at the same time, we mistake their distance. Hence we may see why, when two parallel rows of trees stand upon an ascent, whereby the more remote parts appear farther off than they really are; because the line that measures the length of the vistas now appears under a greater angle than when it was horizontal; the trees, in such a case, will seem to converge less, and sometimes, instead of converging, they will be thought to diverge. For the same reason that a long vista appears to converge more and more the farther it is extended from the eye, the remoter parts of a horizontal walk or a long floor will appear to ascend gradually; and objects placed upon it, the more remote they are the higher they will appear, till the last be seen on a level with the eye; whereas the ceiling of a long gallery appears to descend towards a horizontal line, drawn from the eye of the spectator. For this reason, also, the surface of the sea, seen from an eminence, seems to rise higher and higher the farther we look; and the upper parts of high buildings seem to stoop, or incline forwards over the eye below, because they seem to approach towards a vertical line proceeding from the spectator's eye.

492. Our author also shows the reason why a windmill, seen from a great distance, is sometimes imagined to move the contrary way from what it really does, by our taking the near end of the sail for the more remote. The uncertainty we sometimes find in the course of the motion of a branch of lighted candles, turned round at a distance, is owing, he says, to the same cause; as also our sometimes mistaking a convex for a concave surface, more especially in viewing seals and impressions with a convex glass or a double microscope; and lastly, that, upon coming in a dark night into a street, in which there is but one row of lamps, we often mistake the side of the street they are on.

493. Much more light was thrown upon this curious subject by M. BOUGUER. The proper method of drawing the appearance of two rows of trees, that shall appear parallel to the eye, is a problem which has exercised the ingenuity of several philosophers and mathematicians. That the apparent magnitudes of objects decrease with the angle under which they are seen, has been acknowledged; as well as, that it is only by custom and experience, that we learn to form a judgment both of magnitudes and distances. But in the ap-

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plication of these maxims to the above-mentioned problem, all persons, before M. Bouguer, made use of the real distance instead of the apparent one: by which only the mind can form its judgment. It is manifest, that, if any circumstances contribute to make the distance appear otherwise than it is in reality, the apparent magnitude of the object will be affected by it; for the same reason, that, if the magnitude be misapprehended, the idea of the distance will vary.

494. M. BOUGUER observes, that very great distances, and those that are considerably less than they, make nearly the same impression upon the eye. We, therefore, always imagine great distances to be less than they are; and for this reason the ground plan of a long vista always appears to rise. The visual rays come in a determinate direction; but as we imagine them to terminate sooner than they do, we necessarily conceive that the place from which they issue is elevated. Every large plane, therefore, as AB, (*Pl.* 257, *fig.* 6.) viewed by an eye at O, will seem to lie in such a direction as A*b*; and consequently lines, in order to appear truly parallel on the plane A*b*, must be drawn so as that they would appear parallel on the plane A*b*, and be from thence projected to the plane AB.

495. M. BOUGUER shows several geometrical methods of determining this inclination; and says, that by these means he has often found it to be 4° or 5°, though sometimes only 2° or 2½°. The determination of this angle, he observes, is variable; depending upon the manner in which the ground is illuminated and the intensity of the light. The colour of the soil is also not without its influence. But what is very remarkable, yet may be depended upon, is, that if we look towards a rising ground, the difference between the apparent ground plan and the true one will be much more considerable, so that they will sometimes make an angle of 25° or 30°. Of this he had made frequent observations. Mountains, he says, begin to be inaccessible when their sides make an angle from 35° to 37° with the horizon, as then it is not possible to climb them but by means of stones or shrubs, to serve as steps to fix the feet on. In these cases, both he and his companions always agreed, that the apparent inclination of the side of the mountain was 60° or 70°.

496. These deceptions are represented in *Plate* CCLVI, *fig.* 18, in which, when the ground plan AM, or AN, is much inclined, the apparent ground-plan A*m*, or A*n*, makes a very large angle with it. On the contrary, if the ground dips below the level, the inclination of the apparent to the true ground-plan diminishes, till, at a certain degree of the slope, it becomes nothing at all; the two plans AP and A*p* being the same, so that parallel lines drawn upon them would always appear so. If the inclination below the horizon is carried beyond the situation AP, the error will increase; and what is very remarkable, it will be on the contrary side; the apparent plan A*r* being always below the true plan AR, so that if a person would draw upon the plan AR lines that shall appear parallel to the eye, they must be drawn converging, and not diverging, as is usual on the level ground; because they must be the projections of two lines imagined to be parallel, on the plan A*r*, which is more inclined to the horizon than AR. These remarks are applicable to different planes exposed to the eye at the same time. For if BH, (*Pl.* CCLVII, *fig.* 7.) be the front of a building, at the distance of AB from the eye, it will be reduced in appearance to the distance A*b*; and the front of the building will be *bh*, rather inclined towards the spectator, unless the distance be inconsiderable.

497. After many more observations upon this subject, M. Bouguer adds, that when a man stands upon a level plane, it does not seem to rise sensibly but at some distance from him. The apparent plane, therefore, has a curvature in it, at that distance, the form of which is not very easy to determine; so that a man standing upon a level plane, of vast extent, will imagine that he stands in the centre of a bason. This is also, in some measure, the case with a person standing upon the level of the sea.

498. He observes, that there is no difficulty in drawing lines according to these rules, so as to have any given effect upon the eye, except when some parts of the prospect are very near the spectator, and others very distant from him; because, in this case, regard must be had to the conical or conoidal figure of a surface. A right line passing at a small distance from the observer, and below the level of his eye, in that case almost always appears sensibly curved at a certain distance from the eye; and almost all figures in this case are subject to some complicated optical alteration to which the rules of perspective have not as yet been extended. If a circle be drawn near our feet, and within that part of the ground which appears level to us, it will always appear to be a circle, and at a very considerable distance it will appear an ellipse; but between these two situations, it will not appear to be either the one or the other, but will be like one of those ovals of Descartes which is more curved on one of its sides than the other. On these principles a parterre, which appears distorted when it is seen in a low situation, appears perfectly regular when it is viewed from a balcony or any other eminence. Still, however, the apparent irregularity takes place at a greater distance, while the part that is near the spectator is exempt from it. If AB, (*Pl.* CCLIV. *fig.* 12.) be the ground plane, and A*a* be a perpendicular, under the eye, the higher it is situated, at O, to the greater distance will T, the place at which the plane begins to have an apparent ascent along T*b*, be removed.

499. All the varieties that can occur with respect to the VISIBLE MOTION of objects, are thus succinctly summed up by Dr PORTERFIELD, under 11 heads:—1. An object moving very swiftly is not seen, unless it be very luminous. Thus a cannon-ball is not seen if it is viewed transversely: but if it be viewed according to the line it describes, it may be seen, because its picture continues long on the same place of the retina; which, therefore, receives a more sensible impression from the object. 2. A live coal swung briskly round in a circle appears a continued circle of fire, because the impressions made on the retina by light, being of a vibrating, and consequently of a lasting nature, do not presently perish, but continue till the coal performs its whole circuit, and returns again to its former place. 3. If two objects, unequally distant from

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from the eye, move with equal velocity, the more remote one will appear the flower; or, if their celerities be proportional to their diſtances, they will appear equally ſwift. 4. If two objects, unequally diſtant from the eye, move with unequal velocities in the ſame direction, their apparent velocities are in a ratio compounded of the direct ratio of their true velocities, and the reciprocal one of their diſtances from the eye. 5. A viſible object moving with any velocity appears to be at reſt, if the ſpace deſcribed in the interval of one ſecond be imperceptible at the diſtance of the eye. Hence a near object moving very ſlowly, as the index of a clock, or a remote one very ſwiftly, as a planet, ſeems to be at reſt. 6. An object moving with any degree of velocity will appear at reſt, if the ſpace it runs over in a ſecond of time be to its diſtance from the eye as 1 to 1400. 7. The eye proceeding ſtraight from one place to another, a lateral object, not too far off, whether on the right or left, will ſeem to move the contrary way. 8. The eye proceeding ſtraight from one place to another, and being ſenſible of its motion, diſtant objects will ſeem to move the ſame way, and with the ſame velocity. Thus, to a perſon running eaſtwards, the moon on his right hand appears to move the ſame way, and with equal ſwiftneſs; for, by reaſon of its diſtance, its image continues fixed upon the ſame place of the retina; from whence we imagine that the object moves along with the eye. 9. If the eye and the object move both the ſame way, only the eye much ſwifter than the object, the laſt will appear to go backwards. 10. If two or more objects move with the ſame velocity, and a third remain at reſt, the moveable ones will appear fixed, and the quieſcent in motion the contrary way. Thus clouds moving very ſwiftly, their parts ſeem to preſerve their ſituation, and the moon to move the contrary way. 11. If the eye be moved with great velocity, lateral objects at reſt appear to move the contrary way. Thus to a perſon ſitting in a coach, and riding briſkly through a wood, the trees ſeem to retire the contrary way; and to people in a ſhip, &c. the ſhores ſeem to recede.

500. At the concluſion of theſe obſervations, the Doctor endeavours to explain another phenomenon of motion, which, though very common and well known, had not been explained in a ſatisfactory manner. If a perſon turns ſwiftly round, all objects about will ſeem to move round in a circle the contrary way; and this deception continues, not only while the perſon himſelf moves round, but for ſome time after he ceaſes to move, when the eye, as well as the objects, is at abſolute reſt. The reaſon why objects appear to move round the contrary way, when the eye turns round, is not ſo difficult to explain; for though, properly ſpeaking, motion is not ſeen, as not being in itſelf the immediate object of ſight; yet by the ſight we eaſily know when the image changes its place on the retina, and thence conclude that either the object, the eye, or both, are moved. But by the ſight alone we can never determine how far this motion belongs to the object, to the eye, or to both. If we imagine the eye at reſt, we aſcribe the whole motion to the object, though it be truly at reſt. If we imagine the object at reſt, we aſcribe the whole motion to the eye, though it belongs entirely to the object; and when the eye is in motion, though we are ſenſible of its motion, yet, if we do not imagine that it moves ſo ſwiftly as it really does, we aſcribe only a part of the motion to the eye, and the reſt of it we aſcribe to the object, though it be truly at reſt. This laſt, he ſays, happens in the preſent caſe, when the eye turns round; for though we are ſenſible of the motion of the eye, yet we do not apprehend that it moves ſo faſt as it really does; and therefore the bodies about appear to move the contrary way, as is agreeable to experience. But the great difficulty ſtill remains, viz. Why, after the eye ceaſes to move, objects ſhould, for ſome time, ſtill appear to continue in motion, though their pictures on the retina be truly at reſt, and do not at all change their place. This, he imagined, proceeds from a miſtake we are in with reſpect to the eye, which, though it be abſolutely at reſt, we nevertheleſs conceive as moving the contrary way to that in which it moved before; from which miſtake, with reſpect to the motion of the eye, the objects at reſt will appear to move the ſame way which the eye is imagined to move; and, conſequently, will ſeem to continue their motion for ſome time after the eye is at reſt.

501. This is ingenious, but perhaps not juſt. An account of this matter, which ſeems more ſatisfactory, has been given to the public by Dr WELLS. "Some of the older writers upon optics (ſays he) imagined the *viſive ſpirits* to be contained in the head, as water is in a veſſel; which, therefore, when once put in motion by the rotation of our bodies, muſt continue in it for ſome time after this has ceaſed; and to this real circular movement of the viſive ſpirits, while the body is at reſt, they attributed the apparent motions of objects in giddineſs. DECHALES ſaw the weakneſs of this hypotheſis; and conjectured, that the phenomenon might be owing to a real movement of the eyes; but produced no fact in proof of his opinion. Dr PORTERFIELD, on the contrary, ſuppoſed the difficulty of explaining it to conſiſt in ſhowing, why objects at reſt appear in motion to an eye which is alſo at reſt. The ſolution he offered of this repreſentation of the phenomenon, is not only extremely ingenious, but is, I believe, the only probable one which can be given. It does not apply, however, to the fact which truly exiſts; for the eye is not at reſt, as he imagined. The laſt author I know of who has touched upon this ſubject is Dr DARWIN. His words are, "When any one turns round rapidly on one foot till he becomes dizzy, and falls upon the ground, the ſpectra of the ambient objects continue to preſent themſelves in rotation, or appear to librate, and he ſeems to behold them for ſome time inmotion." I do not pretend to underſtand his opinion fully; but if ſuch an apparent motion of the ſurrounding objects depends in any way upon their ſpectra, or illuſive repreſentations, occaſioned by their former impreſſions upon the retina, no ſimilar motion would be obſerved, were we to turn ourſelves round with our eyes ſhut, and not to open them till we became giddy. But whoever will make the experiment, will find, that objects about him appear to be equally in motion, when he has be-

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come giddy by turning himself round, whether this has been done with his eyes open or shut. I shall now propose my own opinion upon this subject:

502. "If the eye be at rest, we judge an object to be in motion, when its picture falls in succeeding times upon different parts of the retina; and if the eye be in motion, we judge an object to be at rest, as long as the change in the place of its picture upon the retina holds a certain correspondence with the change of the eye's position. Let us now suppose the eye to be in motion, while, from some disorder in the system of sensation, we are either without those feelings which indicate the various positions of the eye, or are not able to attend to them. In such a state of things an object at rest must appear to be in motion, since it sends in succeeding times its picture to different parts of the retina. And this seems to be what happens in giddiness." Dr Wells then relates the particulars of a case of giddiness, which happened to himself, and produced several optical deceptions; from which he infers, that "all these phenomena demonstrate, that there was a real motion in my eyes at the time I imagined them to be at rest; for the apparent situation of the spot, with respect to the paper, could not possibly have been altered, without a real change of the position of these organs. To have this proved, I desired a person to turn quickly round, till he became very giddy; then to stop himself, and look stedfastly at me. He did so, and I could plainly see, that although he thought his eyes were fixed, they were in reality moving in their sockets, first toward one side and then toward the other."

503. M. le Cat well explains a remarkable deception, by which a person shall imagine an object to be on the opposite side of a board, when it is not so, and also inverted and magnified. It is illustrated by *fig.* 8. *pl.* CCLVII. in which D represents the eye, and CB a large black board, pierced with a small hole. E is a large white board, placed beyond it, and strongly illuminated; and *d* a pin, or other small object, held betwixt the eye and the first board. In these circumstances, the pin shall be imagined to be at F, on the other side of the board, where it will appear inverted and magnified; because what is in fact perceived, is the shadow of the pin upon the retina; and the light that is stopped by the upper part of the pin coming from the lower part of the enlightened board, and that which is stopped by the lower part coming from the upper part of the board, the shadow must necessarily be inverted with respect to the object.

504. There is a curious phenomenon relating to vision, which some have ascribed to the inflection of light, but which Mr Melville explains in a very different and very simple manner. When any opaque body is held at the distance of 3 or 4 inches from the eye, so that a part of some more distant luminous object, such as the window, or the flame of a candle, may be seen by rays passing near its edge, if another opaque body, nearer to the eye, be brought across from the opposite side, the edge of the first body will seem to swell outwards and meet the latter; and in doing so will intercept a portion of the luminous object that was seen before. This appearance he explains in the following manner: Let AB (*fig.* 9. *pl.* CCLVII.) represent the luminous object to which the sight is directed, CD the more distant opaque body, GH the nearer, and EF the diameter of the pupil. Join ED, FD, EG, FG, and produce them till they meet AB in K, N, M, and L. It is plain that the parts AN, MB, of the luminous object cannot be seen. But taking any point *a* between N and K, and drawing *a* D *d*, since the portion *d* F of the pupil is filled with light flowing from that point, it must be visible. Any point *b*, between *a* and K, must fill *f* F, a greater portion of the pupil, and therefore must appear brighter. Again, any point *c*, between *b* and K, must appear brighter than *b*, because it fills a greater portion *g* F with light. The point K itself, and every other point in the space KL, must appear very luminous, since they send entire pencils of rays EKF, ELF, to the eye; and the visible brightness of every point from L towards M, must decrease gradually, as from K to N; that is, the spaces KN, LM, will appear as dim shadowy borders, or fringes, adjacent to the edges of the opaque bodies. When the edge G is brought to touch the right line KF, the penumbras unite; and as soon as it reaches NDF, the above phenomenon begins; for it cannot pass that right line without meeting some line *a* D *d*, drawn from a point between N and K, and, by intercepting all the rays that fall upon the pupil, render it invisible. In advancing gradually to the line KDE, it will meet other lines *b* D *f*, *c* D *g*, &c. and therefore render the points *b*, *c*, &c. from N to K successively invisible; and therefore the edge of the fixed opaque body CD must seem to swell outwards, and cover the whole space NK; while GH, by its motion, covers MK. When GH is placed at a greater distance from the eye, CD continuing fixed, the space OP to be passed over in order to intercept NK is less; and therefore, with an equal motion of GH, the apparent swelling of CD must be quicker; which is found true by experience. If ML represent a luminous object, and REFQ any plane exposed to its light, the space FQ will be entirely shaded from the rays, and the space FE will be occupied by a penumbra, gradually darker, from E to F. Let now GH continue fixed, and CD move parallel to the plane EF; and as soon as it passes the line LF, it is evident that the shadow QF will seem to swell outwards; and when CD reaches ME, so as to cover with its shadow the space RE, QF, by its extension, will cover FE. This holds true likewise by experiment.

§ IV. *Of the* Concave Figure *of the* Sky.

505. This apparent concavity is only an optical deception founded on the incapacity of our organs of vision to take in very large distances. Dr Smith in his *Complete System of Optics*, hath demonstrated, that, if the surface of the earth was perfectly plane, the distance of the visible horizon from the eye would scarce exceed the distance of 5000 times the height of the eye above the ground, supposing the height of the eye between 5 and 6 feet: beyond this distance all objects would appear in the visible horizon. For, let OP (*fig.* 13. *pl.* CCLIV.) be the height of the eye above the line PA drawn upon the ground; and if an object AB, equal in height to PO, be removed to a distance PA equal to 5000 times that height, it will hardly be

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Plate CCLVIII.

OPTICS.

Fig. 2.

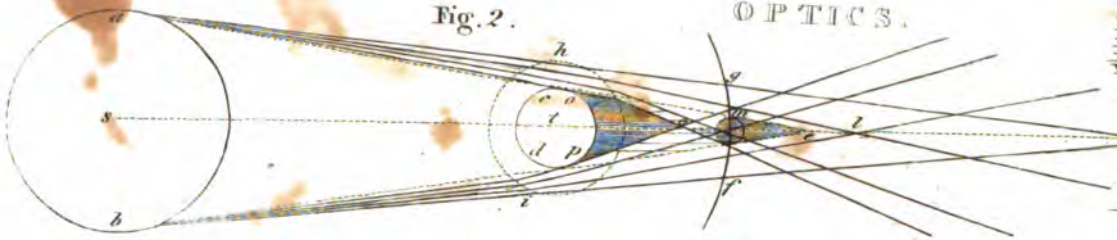


Fig. 1.

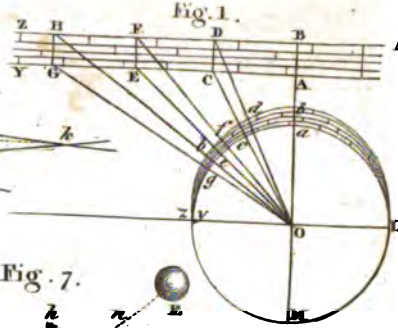


Fig. 6.

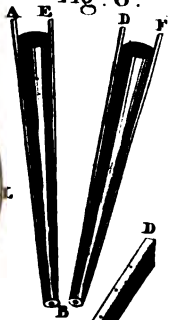


Fig. 3.

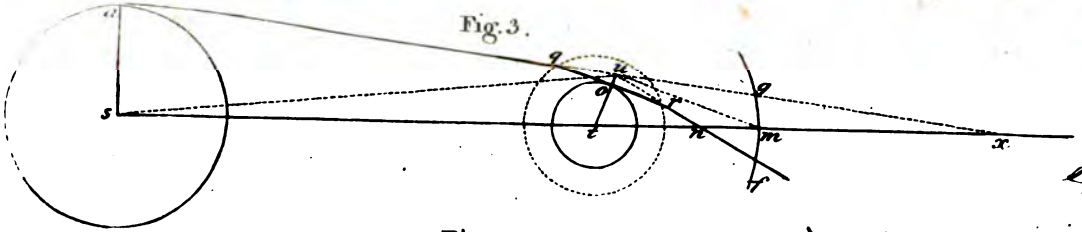
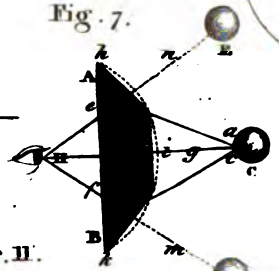


Fig. 7.



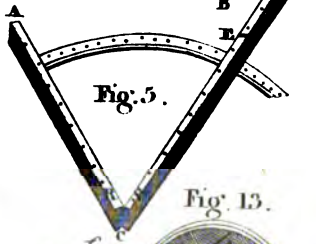


Fig. 5.

Fig. 4.

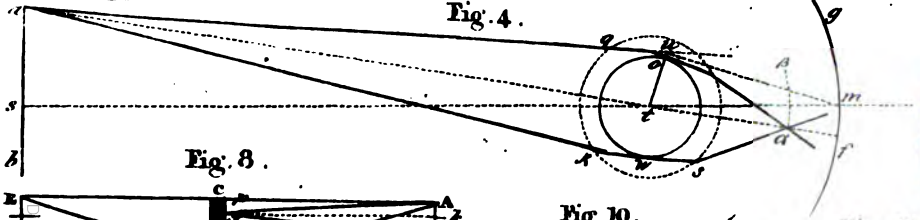


Fig. 11.

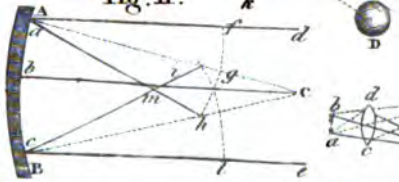


Fig. 13.

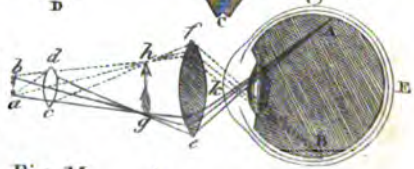


Fig. 8.

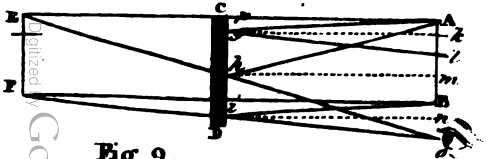


Fig. 10.

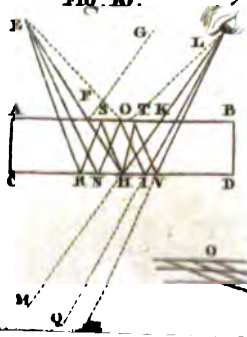


Fig. 12.

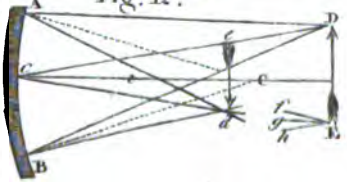


Fig. 15.

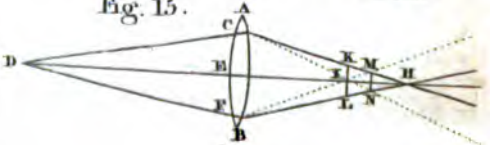


Fig. 9.

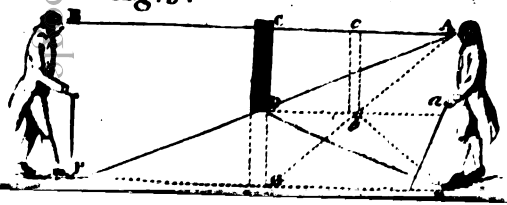


Fig. 14.

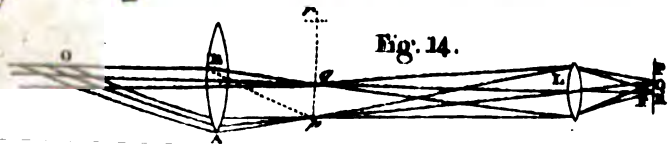
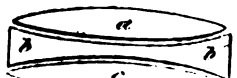


Fig. 16.



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be visible by reason of the smallness of the angle AOB. Consequently any distance AC, how great soever, beyond A, will be invisible. For since AC and BO are parallel, the ray CO will always cut AB in some point D between A and B; and therefore the angle AOC, or AOD, will always be less than AOB, and therefore AD or AC will be invisible. Of course all objects and clouds, as CE and FG, placed at all distances beyond A, if they be high enough to be visible, or to subtend a bigger angle at the eye than AOB, will appear at the horizon AB; because the distance AC is invisible.

506. Hence, if we suppose a vast long row of objects, or a vast long wall ABZY (*fig.* 1. *Plate* CCLVIII.) built upon this plane, and its perpendicular distance OA from the eye at O to be equal to or greater than the distance O*a* of the visible horizon, it will not appear straight, but circular, as if it were built upon the circumference of the horizon *a e g y*: and if the wall be continued to an immense distance, its extreme parts YZ will appear in the horizon at *yz*, where it is cut by a line O*y* parallel to the wall. For, supposing a ray YO, the angle YO*y* will become insensibly small. Imagine this infinite plane OAY*y*, with the wall upon it, to be turned about the horizontal line O like the lid of a box, till it becomes perpendicular to the other half of the horizontal plane LM*y*, and the wall parallel to it, like a vast ceiling overhead; and then the wall will appear like the concave figure of the clouds overhead. But though the wall in the horizon appear in the figure of a semicircle, yet the ceiling will not, but much flatter. Because the horizontal plane was a visible surface, which suggested the idea of the same distances quite round the eye; but in the vertical plane extended between the eye and the ceiling, there is nothing that affects the sense with an idea of its parts but the common line O*y*; consequently the apparent distances of the higher parts of the ceiling will be gradually diminished in ascending from that line. When the sky is quite overcast with the clouds of equal gravities, they will all float in the air at equal heights above the earth, and consequently will compose a surface resembling a large ceiling, as flat as the visible surface of the earth. Its concavity therefore is not real, but apparent: and when the heights of the clouds are unequal, since their real shapes and magnitudes are all unknown, the eye can seldom distinguish the unequal distances of those clouds that appear in the same directions, unless when they are very near us, or are driven by contrary currents of the air. So that the visible shape of the whole surface remains alike in both cases. And when the sky is either partly overcast, or partly free from clouds, it is matter of fact, that we retain much the same idea of its concavity, as when it was quite overcast.

507. The concavity of the heavens appears to the eye, to be a less portion of the spherical surface than a hemisphere. Dr SMITH says, that the centre of the concavity is much below the eye; and by taking a medium among several observations, he found the apparent distance of its parts at the horizon to be generally between 3 and 4 times greater than the apparent distance of its parts overhead. For let the arch ABCD (*fig.* 10, *pl.* 257.) represent the apparent concavity of the sky, O the place of the eye, OA and OC the horizontal and vertical apparent distances, whose proportion is required: First observe when the sun or the moon, or any cloud or star, is in such a position that the apparent arches BA, BC, extended on each side of this object towards the horizon and zenith, seem equal to the eye; then taking the altitude of the object B with a quadrant, or finding it by astronomy from the given time of observation, the angle AOB is known. Drawing therefore the line OB in the position thus determined, and taking in it any point B at pleasure, in the vertical line CO produced downwards, seek the centre E of a circle ABC, whose arches BA, BC, intercepted between B and the legs of the right angle AOC, shall be equal to each other; then will this arch ABCD represent the apparent figure of the sky. The centre E may be found geometrically by constructing a cubic equation, or as quickly, and sufficiently exact, by trying whether the chords BA, BC, of the arch ABC drawn by conjecture are equal, and by altering its radius BE till they are so. In making several observations upon the sun, moon, and stars, they seemed to the Dr to bisect the vertical arch ABC at B, when their apparent altitudes, or the right angle AOB was about 23 degrees; which gives the proportion of OC to OA as 3 to 10, or as 1 to $3\frac{1}{3}$ nearly. When the sun was but 30° high, the upper arch seemed always less than the under one; and, in Dr Smith's opinion, always greater when the sun was about 18° or 20° high.

§ V. *Of the* BLUE COLOUR *of the* SKY, *and of* BLUE *and* GREEN SHADOWS.

508. THE opinions of ancient writers concerning the colour of the sky merit no notice. The first who gave any rational explanation was FROMONDUS. By him it was supposed, that the blueness of the sky proceeded from a mixture of the white light of the sun with the black space beyond the atmosphere, where there is neither refraction nor reflection. This opinion prevailed very generally even in modern times, and was maintained by OTTO GUERICK and all his contemporaries, who asserted that white and black may be mixed in such a manner as to make a blue. Mr BOUGUER had recourse to the vapours diffused through the atmosphere, to account for the reflection of the blue rays rather than any other. He seems, however, to suppose, that it arises from the constitution of the air itself, whereby the fainter coloured rays are incapable of making their way through any considerable tract of it. Hence he is of opinion, that the colour of the air is properly blue; to which opinion Dr Smith seems also to have inclined.

509. To this blue colour of the sky is owing the appearance of blue and green shadows in the mornings and evenings.—These were first taken notice of by Count BUFFON, in July 1742, when he observed, that the shadows of trees which fell upon a white wall were green. He was then upon an eminence, and the sun was setting on the cleft of a mountain, so that he appeared considerably lower than the horizon. The sky was clear, excepting in the W which, though free from clouds, was lightly shaded with vapours of a yellow colour, inclining to red. Then the sun itself was exceedingly

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ingly red, and was, seemingly at least, 4 times as large as he appears to be at mid-day. In these circumstances he saw very distinctly the shadows of the trees, which were 30 or 40 feet from the white wall, coloured with a light green inclining to blue. The shadow of an arbour, which was 3 feet from the wall, was exactly drawn upon it, and looked as if it had been newly painted with verdigrise. This appearance lasted near 5 minutes; after which it grew fainter, and vanished with the light of the sun. The next morning, at sun-rise, he went to observe other shadows, upon another white wall; but instead of finding them green, as he expected, he observed that they were blue, or rather lively indigo. The sky was serene, except a slight covering of yellowish vapours in the E., and the sun arose behind a hill, so that it was elevated above his horizon. The blue shadows were only visible three minutes; after which they appeared black, and in the evening of the same day he observed the green shadows exactly as before. Six days passed without his being able to repeat his observations, on account of the clouds; but the 7th, at sunset, the shadows were not green, but of a beautiful sky-blue. The sky was in a great measure free from vapours at that time; and the sun set behind a rock, so that it disappeared before it came to his horizon. Afterwards he often observed the shadows both at sun-rise and sun-set; but always observed them blue, though with a great variety of shades of that colour. He showed this phenomenon to many of his friends, who were surprised at it; but he says that any person may see a blue shadow, if he will only hold his finger before a piece of white paper at sun-rise or sun-set.

510. The first who attempted to explain this phenomenon was Abbe Mazeas, in a memoir of the society in Berlin, for 1752. He observed, that when an opaque body was illuminated by the moon and a candle at the same time, and the two shadows were cast upon the same white wall, that which was enlightened by the candle was reddish, and that which was enlightened by the moon was blue. But, without attending to any other circumstances, he supposed the change of colour to be occasioned by the diminution of the light; but M. Melville, and M. Bouguer, both unknown to one another, seem to have hit upon the true cause of this curious appearance. The former, in his attempts to explain the blue colour of the sky, observes, that since it is certain that no body assumes any particular colour, but because it reflects one sort of rays more abundantly than the rest; and as the constituent parts of pure air are not gross enough to separate any colours of themselves; we must conclude with Sir Isaac Newton, that the violet and blue-making rays are reflected more copiously than the rest, by the finer vapours diffused through the atmosphere, whose parts are not big enough to give them the appearance of visible opaque clouds. And he shows, that in proper circumstances, the bluish colour of the sky-light may be actually seen on bodies illuminated by it. For if, on a clear cloudless day, a sheet of white paper be exposed to the sun's beams, when any opaque body is placed upon it, the shadow which is illuminated by the sky only will appear remarkably bluish compared with the rest of the paper, which receives the sun's direct rays.

511. M. Bouguer observes, that as Count Buffon mentions the shadows appearing green only twice, and that at all other times they were blue, this is the colour which they regularly have, and that the blue was changed into green by some accidental circumstance. Green is only a composition of blue and yellow, so that this accidental change may have arisen from the mixture of some yellow rays in the blue shadow; and perhaps the wall might have had that tinge, so that the blue is the only colour for which a general reason is required. And this, he says, must be derived from the colour of pure air, which always appears blue, and reflects that colour upon all objects without distinction; but which is too faint to be perceived when our eyes are strongly affected by the light of the sun, reflected from other objects. To confirm this hypothesis, he adds some curious observations of his own, in which this appearance is agreeably diversified. Being at Boucholtz in July 1764, he observed the shadows projected on the white paper of his pocket-book, when the sky was clear. At half past 6 PM. when the sun was about four degrees high, he observed that the shadow of his finger was of a dark grey, while he held the paper opposite the sun; but when he inclined it almost horizontally, the paper had a bluish cast, and the shadow upon it was of a beautiful bright blue. When his eye was placed between the sun and the paper laid horizontally, it always appeared of a bluish cast; but when he held the paper thus inclined between his eye and the sun, he could distinguish, upon every little eminence occasioned by the inequality of the surface of the paper, the principal of the prismatic colours. He also perceived them upon his nails and upon the skin of his hand. This multitude of coloured points, red, yellow, green and blue, almost effaced the natural colour of the objects. At three quarters past six, the shadows began to be blue, even when the rays of the sun fell perpendicularly. The colour was the most lively when the rays fell upon it at an angle of 45°; but, with a less inclination of the paper, he could distinctly perceive, that the blue shadow had a border of a stronger blue on that side which looked towards the sky, and a red border on that side which was turned towards the earth. To see these borders, the body that made the shadow was obliged to be placed very near the paper, and the nearer it was the more sensible was the red border. At the distance of 3 inches, the whole shadow was blue. It was brightest when the paper was inclined to an angle of 45°. In a situation precisely horizontal, there was no shadow. Thus too much, or too little of the sun's light produced the same effect; for they both made the blue light reflected from the sky to become insensible. He never saw any green shadows, but when he made them fall on yellow paper. The blue shadows were not confined to sun-rising and sun-setting; on the 19th of July, when the sun has the greatest force, he observed them at 3 PM. but the sun shone through a mist at that time. If the sky is clear, the shadows begin to be blue; when, if they be projected horizontally, they are eight times as long as the height

of

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of the body that produces them, that is, when the centre of the sun is 7° 8′ above the horizon. This observation he made in the beginning of August.

512. Besides these coloured shadows, which are produced by the interception of the direct rays of the sun, our author observed others similar to them, at every hour of the day, in rooms into which the light of the sun was reflected from some white body, if any part of the clear sky could be seen from the place, and all unnecessary light was excluded as much as possible. Observing these precautions, he says that the blue shadows may be seen at any hour of the day, even with the direct light of the sun; and that this colour will disappear in all those places of the shadow from which the blue sky cannot be seen. All the observations he made upon the yellow or reddish borders of shadows above-mentioned, led him to conclude, that they were occasioned by the interception of the sky-light, whereby part of the shadow was illuminated either by the red rays reflected from the clouds, when the sun is near the horizon, or from some terrestrial bodies in the neighbourhood. He mentions also another kind of shadows which have the same origin. These he often saw early in spring, when he was reading by the light of a candle in the morning, and the twilight mixed with that of his candle. In these circumstances, the shadow made by intercepting the light of his candle, at the distance of about six feet, was of a beautiful and clear blue, which became deeper as the opaque body which made the shadow was brought nearer to the wall, and was exceedingly deep at the distance of a few inches only. But wherever the day-light did not come, the shadows were all black without the least mixture of blue.

§ VI. *Of the* IRRADIATIONS *of the* SUN'S LIGHT *appearing through the* INTERSTICES *of the* CLOUDS.

513. This is an appearance which every one must have observed, when the sky was pretty much overcast with clouds at some distance from each other. At that time several large beams of light, something like the appearance of the light of the sun admitted into a smoky room, will be seen generally with a very considerable degree of divergence, as if the radiant point was situated at no great distance above the clouds. Dr Smith observes, that this appearance is one of those which serve to demonstrate, that very high and remote objects in the heavens do not appear to us in their real shapes and positions, but according to their perspective projections on the apparent concavity of the sky. He says that though these beams are generally seen diverging, as represented in *fig.* 11. *Pl.* 257. it is not always the case. He himself once saw them converging towards a point diametrically opposite to the sun: for, as near as he could conjecture, the point to which they converged was situated as much below the horizon, as the sun was then elevated above the opposite part of it. This part is represented by the line *t*D*t*, *fig.* 12. and the point below it in opposition to the sun is E; towards which all the beams *vt*, *vt*, &c. appeared to converge.

514. "Observing (says he) that the point of convergence was opposite to the sun, I began to suspect, that this unusual phenomenon was but a case of the usual apparent divergence of the beams of the sun, from his apparent place among the clouds, as represented in *fig.* 11: I say an *apparent* divergence; for though nothing is more common than for rays to diverge from a luminous body, yet the divergence of these beams in such large angles is not real, but apparent: Because it is impossible for the direct rays of the sun to cross one another at any point of the apparent concavity of the sky, in a greater angle than about half a degree. For the diameter of the earth being so extremely small, in comparison to the distance of the sun, as to subtend an angle at any point of his body of but 20″ or 22″ at most; and the diameter of our visible horizon being extremely smaller than that of the earth; it is plain, that all the rays which fall upon the horizon, from any given point of the sun, must be inclined to each other in the smallest angles imaginable: the greatest of them being as much smaller than that angle of 22 seconds, as the diameter of the visible horizon is smaller than that of the earth. All the rays that come to us from any given point of the sun may therefore be considered as parallel to each other; as the rays *e*B*g* (*fig.* 13. *Pl.* 257.) from the point *e*, or *f*B*b* from the opposite point *f*; and consequently the rays of these two pencils that come from opposite points of the sun's real diameter, and cross each other in the sun's apparent place B among the clouds, can constitute no greater an angle with each other than about half a degree; this angle of their intersection *e*B*f* being the same as the sun would appear under to an eye placed among the clouds at B, or (which is much the same) to an eye at O upon the ground: Because the sun's real distance OS is inconceivably greater than his apparent distance OB. Therefore the rays of the sun, as B*g*, B*b*, do really diverge from his apparent place B in no greater angles *g*B*b* than about half a degree. Nevertheless they appear to diverge from the place B *fig.* 11. in all possible angles, and even in opposite directions. Let us proceed then to an explanation of this apparent divergence, which is not self-evident by any means; though at first sight we are apt to think it is, by not distinguishing the vast difference between the true and apparent distances of the sun.

515. "Supposing all the rays of the sun to fall accurately parallel to each other upon the visible horizon, as they do very nearly, yet in both cases they must appear to diverge in all possible angles. Let us imagine the heavens to be partly overcast with a spacious bed of broken clouds *v*, *v*, *v*, &c. *Pl.* 261. *fig.* 4. lying parallel to the plane of the visible horizon, here represented by the line AOD; and when the sun's rays fall upon these clouds in the parallel lines *sv*, *sv*, &c. let some of them pass through their intervals in the lines *vt*, *vt*, &c. and fall upon the plane of the horizon at the places *t*, *t*, &c. And since the rest of the incident rays *sv*, *sv*, are supposed to be intercepted from the place of the spectator at O by the cloud *s*, and from the intervals between the transmitted rays *vt*, *vt*, &c. by the cloud *v*, *v*, &c. a small part of these latter rays *vt*, *vt*, when reflected every way from some certain kind of thin vapours floating in the air, may undoubtedly be sufficient to affect the eye with an appearance of lights and shades, in the form of bright beams in the places *vt*, *vt*, &c. and of dark ones in the intervals between.

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tween them; just as the like beams of light and shade appear in a room by reflections of the sun's rays from a smoky or dusty air within it; the lights and shades being here occasioned by the transmission of the rays through some parts of the window, and by their interruption at other parts. Now, if the apparent concavity of this bed of clouds *v*, *v*, to the eye at O, be represented by the arch ABCD, and be cut in the point B by the line OB *s* drawn parallel to the beams *s v*, it will be evident by the rules of perspective, that these long beams will not appear in their real places, but upon the concave ABCD diverging every way from the place B, where the sun himself appears, or the cloud *u* that covers his body, as represented separately in full view, in *fig.* 11. *pl.* CCLVII. And for the same reason, if the line BO, *fig.* 4. *plate* CCLXI. be produced towards E, below the plane of the horizon AOD, and the eye be directed towards the region of the sky directly above E, the lower ends of the same real beams *v s*, *v s*, will now appear upon the part DF of this concave; and will seem to converge towards the point E, situated just as much below the horizon as the opposite point B is above it; which is separately represented in full view, in *fig.* 12. *pl.* CCLVII. For if the beams *v s*, *v s*, be supposed to be visible throughout their whole lengths, and the eye be directed in a plane perpendicular to them, here represented by the line OF, *fig.* 4. *pl.* CCLXI.; they and their intervals will appear broadest in and about this plane, because these parts of them are the nearest to the eye; and therefore their remoter parts and intervals will appear gradually narrower towards the opposite ends of the line BE. As a farther illustration of this matter, we may conceive the spectator at O to be situated upon the top of so large a descent OHI towards a remote valley IE, and the sun to be so very low, that the point B opposite to him may be seen above the horizon of this shady valley. In this case it is manifest, that the spectator at O would now see these beams converging so far as to meet each other at the point E in the sky itself.

516. "I do not remember to have ever seen any phenomenon of this kind by moon-light. Probably her light is too weak, to cause a sensible appearance of lights and shades, so as to form these beams. In the unusual phenomenon, the converging sun-beams towards the point below the horizon were not quite so bright and strong as those usually are that diverge from him; and the sky beyond them appeared very black (several showers having passed that way), which certainly contributed to the evidence of this appearance. Hence it is probable, that the thinness and weakness of the reflected rays, from the vapours opposite to the sun, is the chief cause that this appearance is so very uncommon in comparison to that other of diverging beams; for, as the region of the sky round about the sun is always brighter than the opposite one, so the light of the diverging beams ought also to be brighter than that of the converging ones. For, though rays are reflected from rough unpolished bodies in all possible directions, yet it is a general observation, that more of them are reflected forwards obliquely, than are reflected more directly backwards. Besides, in the present case, the incident rays upon the opposite region to the sun, are more diminished by continual reflections from a longer tract of the atmosphere, than the incident rays upon the region next the sun.

517. "The common phenomenon of *diverging* beams is more frequent in summer than in winter, and also when the sun is lower than when higher up; probably because the lower vapours are denser, and therefore more strongly reflective than the higher; because the lower sky-light is not so bright as the upper; because the air is generally quieter in the mornings and evenings than about noon-day; and, lastly, because many sorts of vapours are exhaled in greater plenty in summer than in winter, from many kinds of volatile vegetables; which vapours, when the air is cooled and condensed in the mornings and evenings, may become dense enough to reflect a sensible light."

§ VII. *Of the* Illumination *of the* Shadow *of the* Earth *by the* Refraction *of the* Atmosphere.

518. The ancient philosophers, who knew nothing of the refractive power of the atmosphere, were very much perplexed to account for the body of the moon being visible when totally eclipsed. At such times she generally appears of a dusk red colour like tarnished copper, or of iron almost red-hot. This, they thought, was the moon's native light, by which she became visible when hid from the brighter light of the sun. Plutarch indeed, in his discourse upon the face of the moon, attributes this appearance to the light of the fixed stars reflected to us by the moon; but this must be by far too weak to produce that effect. The true cause of it is the scattered beams of the sun bent into the earth's shadow by refractions through the atmosphere in the following manner.

519. "Let the body of the sun, says Dr Smith, be represented by the greater circle *a b*, *fig.* 2. *pl.* CCLVIII. and that of the earth by the lesser one *c d*; and let the lines *a c e* and *b d e* touch them both on their opposite sides, and meet in *e* beyond the earth; then the angular space *c e d* will represent the conic figure of the earth's shadow, which would be totally deprived of the sun's rays, were none of them bent into it by the refractive power of the atmosphere. Let this power just vanish at the circle *b i*, concentric to the earth, so that the rays *a h* and *b i*, which touch its opposite sides, may proceed unrefracted, and meet each other at *k*. Then the two nearest rays to these that flow within them, from the same points *a* and *b* being refracted inwards, through the margin of the atmosphere, will cross each other at a point *l*, somewhat nearer to the earth than *k*; and, in like manner, two opposite rays next within the two last will cross each other at a point *m*, somewhat nearer to the earth than *l*; having suffered greater refractions, by passing through longer and denser tracts of air, lying somewhat nearer to the earth. The like approach of the successive intersections *k*, *l*, *m*, is to be understood of innumerable couples of rays, till you come to the intersection *n* of the two innermost; which we may suppose just to touch the earth at the points *o* and *p*. It is plain then, that the space bounded by these rays *o n*, *n p*, will be

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be the only part of the earth's shadow wholly deprived of the sun's rays. Let *f m g* represent part of the moon's orbit when it is nearest to the earth, at a time when the earth's dark shadow *o n p* is the longest; in this case I will show that the ratio of *t m* to *t n* is about 4 to 3; and consequently that the moon, though centrally eclipsed at *m*, may yet be visible by means of those scattered rays above-mentioned, first transmitted to the moon by refraction through the atmosphere, and from thence reflected to the earth. For, let the incident and emergent parts *a q*, *r n*, of the ray *a g o r n* (*fig.* 3. *pl.* CCLVIII.), that just touches the earth at *o*, be produced till they meet at *u*, and let *a q u* produced meet the axis *s t* produced in *x*; and joining *u s* and *u m*, since the refractions of an horizontal ray passing from *o* to *r*, or from *o* to *q*, would be alike and equal, the external angle *n u x* is double the quantity of the usual refraction of an horizontal ray, and the angle *a u s* is the apparent measure of the sun's semidiameter seen from the earth; and the angle *u s t* is that of the earth's semidiameter *t u* seen from the sun, (called his *horizontal parallax*); and, lastly, the angle *u m t* is that of the earth's semidiameter seen from the moon, (called her *horizontal parallax*): because the elevation of the point *u* above the earth is too small to make a sensible error in the quantity of these angles; whose measures by astronomical tables are as follow:

		′	″
Sun's least app. semidiam.	=ang. *a u s* =	15	50
His horizontal parallax	=ang. *u s t* =	00	10
Their difference	=ang. *t n u* =	15	40
Double the horiz. refract.	=ang. *n u x* =	67	30
Their sum is	=ang. *t n u* =	83	10
Moon's greatest hor. par.	=ang. *t m u* =	62	10

520. "Therefore (by a preceding prop.) we have *t m* : *t n* :: (ang. *t n u* : ang. *t m u* :: 83′—10″ : 62′—10″ ::) 4 : 3 in round numbers; which was to be proved. It is easy to collect from the moon's greatest horizontal parallax of 62′—10″, that her least distance *t m* is about 55½ semidiameters of the earth; and therefore the greatest length *t n* of the dark shadow, being three quarters of *t m*, is about 41¼ semidiameters.

521. "The difference of the last mentioned angles *t n u*, *t m u*, is *m u n* = 21′, that is, about two thirds of 31′—40″, the angle which the whole diameter of the sun subtends at *u*. Whence it follows, that the middle point *m* of the moon, centrally eclipsed, is illuminated by rays which come from two thirds of every diameter of the sun's disk, and pass by one side of the earth; and also by rays that come from the opposite two thirds of every one of the said diameters, and pass by the other side of the earth. This will appear by conceiving the ray *a q o r n* to be be inflexible, and its middle point *o* to slide upon the earth, while the part *r n* is approaching to touch the point *m*; for then the oppsite part *q a* will trace over two thirds of the sun's diameter. The true proportion of the angles *t u m*, *a u s*, could not be preserved in the figure, by reason of the sun's immense distance and magnitude with respect to the earth.

522. "Having drawn the line *d t α* (*fig.* 4. *plate* CCLVIII.), it is observable, that all the incident rays, as *a q*, *a x*, flowing from any one point of the sun to the circumference of the earth, will be collected to a focus *α*, whose distance *t α* is less than *t m* in the ratio of 62 to 67 nearly; and thus an image of the sun will be formed at *α β*, whose rays will diverge upon the moon. For the angle *t α u* is the difference of the angles *x u α*, *u α t* found above, and *t α* : *t m* :: ang. *t m u* : ang. *t α u* :: 62′—10″ : 67′—30″. The rays that flow next above *a q* and *a x*, by passing through a thinner part of the atmosphere, will be united at a point in the axis *a t α*, somewhat farther from the earth than the last focus *α*; and the same may be said of the rays that pass next above these, and so on; whereby an infinite series of images of the sun will be formed, whose diameters and degrees of brightness will increase with their distances from the earth.

523. "Hence it is manifest why the MOON eclipsed in her perigee is observed to appear always duller and darker than in her apogee. The reason why her colour is always of the copper kind between a dull red and orange, I take to be this. The blue colour of a clear sky shows manifestly, that the blue-making rays are more copiously reflected from pure air than those of any other colour; consequently they are less copiously transmitted through it among the rest that come from the sun, and so much the less as the tract of air through which they pass is the longer. Hence the common colour of the sun and moon is whitest in the meridian, and grows gradually more inclined to diluted yellow, orange, and red, as they descend lower, that is, as the rays are transmitted through a longer tract of air; which tract, being still lengthened in passing to the moon and back again, causes a still greater loss of the blue-making rays in proportion to the rest; and so the resulting colour of the transmitted rays must lie between a dark orange and red, according to Sir Isaac Newton's rule for finding the result of a mixture of colours. We have an instance of the reverse of this case in *leaf gold*, which appears yellow by reflected, and blue by transmitted, rays. The circular edge of the shadow in a partial eclipse appears red; because the red-making rays are the least refracted of all others, and consequently are left alone in the conical surface of the shadow, all the rest being refracted into it."

§ VIII. *Of the* MEASURES *of* LIGHT.

524. THAT some luminous bodies give a stronger and others a weaker light, and that some reflect more light than others, was always obvious to mankind; but no person before M. BOUGUER hit upon a tolerable method of ascertaining the proportion that two or more lights bear to one another. The methods he used were the following:

525. He took two pieces of wood or pasteboard EC and CD (*fig.* 14. *plate* CCLVII.), in which he made two equal holes P and Q, over which he drew pieces of oiled or white paper. Upon these holes he contrived that the light of the different bodies he was comparing should fall; while he placed a third piece of pasteboard FC, so as to prevent the two lights from mixing with one another. Then placing himself sometimes on one side, and sometimes on the other, but generally on the opposite side of this instrument, with respect to the

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light,

light, he altered their position till the papers in the two holes appeared to be equally enlightened. This being done, he computed the proportion of their light by the squares of the distances at which the luminous bodies were placed from the objects. If, for instance, the distances were as 3 and 9, he concluded that the light they gave were as 9 and 81. Where any light was very faint, he sometimes made use of lenses to condense it; and he inclosed them in tubes or not as his particular application of them required.

526. To measure the intensity of light proceeding from the heavenly bodies, or reflected from any part of the sky, he contrived an instrument which resembles a kind of portable camera obscura. He had two tubes, of which the inner was black, fastened at their lower extremities by a hinge C, (*fig.* 5. *pl.* CCLVIII.) At the bottom of these tubes were two holes, R and S, 3 or 4 lines in diameter, covered with two pieces of fine white paper. The two other extremities had each of them a circular aperture, an inch in diameter; one of the tubes consisted of two, one of them sliding into the other, which produced the same effect as varying the aperture at the end. When this instrument is used, the observer has his head and the end of the instrument C so covered, that no light can fall upon his eye besides that which comes through the two holes S and R, while an assistant manages the instrument, and draws out or shortens the tube DE, as the observer directs. When the two holes appear equally illuminated, the intensity of the lights is judged to be inversely as the squares of the tubes. In using this instrument, the object should subtend an angle larger than the aperture A or D, seen from the other end of the tube; for, otherwise, the lengthening of the tube has no effect. To avoid, in this case, making the instrument of an inconvenient length, or making the aperture D too narrow, he has recourse to another expedient. He constructs an instrument, (see *fig.* 6.), consisting of two object-glasses, AE and DF, exactly equal, fixed in the ends of two tubes six or seven feet, or, in some cases, 10 or 12 feet long, and having their foci at the other ends. At the bottom of these tubes B are two holes, 3 or 4 lines in diameter, covered with a piece of white paper; and this instrument is used exactly like the former.

527. If the two objects to be observed by this instrument be not equally luminous, the light that issues from them must be reduced to an equality, by diminishing the aperture of one of the object-glasses; and then the remaining surface of the two glasses will give the proportion of their lights. But for this purpose, the central parts of the glass must be covered in the same proportion with the parts near the circumference, leaving the aperture such as is represented, (*pl.* CCLVII. *fig.* 15.), because the middle part of the glass is thicker and less transparent than the rest. If all the objects to be observed lie nearly in the same direction, he observes, that these two long tubes may be reduced into one, the two object-glasses being placed close together, and one eye-glass sufficing for both. The instrument will then be the same with that of which he published an account in 1748, and which he called a HELIOMETER, or ASTROMETER.

528. He observes, that it is not the absolute quantity, but only the intensity of the light that is measured by these two instruments, or the number of rays, in proportion to the surface of the luminous body; and it is of great importance that these two things be distinguished. The intensity of light may be very great, when the quantity and its power of illuminating other bodies may be very small, on account of the smallness of its surface; or the contrary may be the case, when the surface is large. To these methods which he took to measure the proportions of light, we subjoin a few examples of his application of them.

529. When a person stands in a place where there is a strong light, he cannot distinguish objects that are placed in the shade; nor can he see any thing upon going immediately into a place where there is very little light. It is plain, therefore, that the action of a strong light upon the eye, and also the impression which it leaves upon it, makes it insensible to the effect of a weaker light. M Bouguer endeavoured to ascertain the proportion between the intensities of the two lights in this case; and by throwing the light of two equal candles upon a board, he found that the shadow made by intercepting the light of one of them, could not be perceived by his eye, upon the place enlightened by the other, at little more than eight times the distance; whence he concluded, that when one light is 8 times 8, or 64 times less than another, its presence or absence will not be perceived. He allows, however, that the effect may be different on different eyes; and supposes that the boundaries in this case, with respect to different persons, may lie between 60 and 80.

530. Applying the two tubes of his instrument, to measure the intensity of the light reflected from different parts of the sky, he found, that when the sun was 25° high, the light was four times stronger at the distance of 8° or 9° from his body, than it was at 31° or 32°. But what struck him the most was to find, that when the sun is 15° or 20° high, the light decreases on the same parallel to the horizon to 110° or 120°, and then increases again to the place exactly opposite to the sun. The light of the sun, he observes, is too strong, and that of the stars too weak, to determine the variation of their light at different altitudes; but as, in both cases, it must be in the same proportion with the diminution of the light of the moon in the same circumstances, he made his observations on that luminary, and found, that its light at 19° 16′, is to its light at 66° 11′, as 1681 to 2500; that is, the one is nearly two thirds of the other. He chose those particular altitudes, because they are those of the sun at the two solstices at Croisic, where he then resided. When one limb of the moon touched the horizon of the sea, its light was 2000 times less than at the altitude of 66° 11′. But this proportion he acknowledges must be subject to many variations, the atmosphere near the earth varying so much in its density. From this observation he concludes, that, at a medium, light is diminished in the proportion of about 2500 to 1681, in traversing 7469 toises of dense air. Lastly, he applied his instrument to the different parts of the sun's disk, and found that the centre is considerably more luminous than the extremities of it.

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As near as he could make the obſervation, it was more luminous than a part of the diſk $\frac{1}{4}$ths of the ſemidiameter from it, in the proportion of 35 to 28; which is more than in the proportion of the ſines of the angles of obliquity. On the other hand both the primary and ſecondary planets are more luminous at their edges than near their centres.

531. The compariſon of the light of the ſun and moon is a ſubject that has often exerciſed the thoughts of philoſophers; but we find nothing but random conjectures, before our author applied his accurate meaſures. In general, the light of the moon is imagined to bear a much greater proportion to that of the ſun than it really does; and not only are the imaginations of the vulgar, but thoſe of philoſophers alſo, impoſed upon with reſpect to it. M. De la Hire could not, by the help of any burning mirror, collect the beams of the moon in a ſufficient quantity to produce the leaſt ſenſible heat. Other philoſophers have ſince made the like attempts with mirrors of greater power, without greater ſucceſs.

532. To ſolve this curious problem, M. BOUGUER compared the light of each luminary to that of a candle in a dark room, one in the day-time, and the other in the night following, when the moon was at her mean diſtance from the earth; and, after many trials, he concluded that the light of the ſun is about 306,000 times greater than that of the moon; which is ſuch a diſproportion, that, it can be no wonder, that philoſophers have had ſo little ſucceſs in their attempts to collect the light of the moon with burning-glaſſes. For the largeſt of them will not increaſe the light 1000 times; which will ſtill leave the light of the moon, in the focus of the mirror, 300 times leſs than the intenſity of the common light of the ſun.

533. Dr SMITH made an eſtimate of the quantity which *would* have been tranſmitted to us from the opaque body, if it reflected *all* the light it receives; and thought that he had proved, that the light of the full moon would be to our day-light as 1 to about 90·900, if no rays were loſt at the moon. For his calculation on this conjecture, we refer the reader to his work, as it is tedious, and on the whole uncertain.

534. Mr MICHELL made a ſimilar computation in a more ſimple and eaſy manner. Conſidering the diſtance of the moon from the ſun, and that the denſity of the light muſt decreaſe in the proportion of the ſquare of that diſtance, he calculated the denſity of the ſun's light, at that diſtance, in proportion to its denſity at the ſurface of the ſun; and thus found, that if the moon reflected all the light it receives from the ſun, it would only be the 45,000th part of the light we receive from the luminary. Admitting, therefore, that moon-light is only a 300,000th part of the light of the ſun, Mr Michell concludes, that it reflects no more than between the 6th and 7th part of what falls upon it.

SECT. II. *Of* ABERRATION.

535. THE great practical uſe of the ſcience of optics is to aid human ſight; but in conſtructing dioptrical inſtruments for this purpoſe, great difficulties ariſe from the aberration of light. It has been ſhown, § 273, 274, &c. how to determine the concourſe of any refracted ray PF with the ray RVCF (*figs.* 5, 6, &c. *Plate* CCLII.) which paſſes through the centre C, and therefore falls perpendicularly on the ſpherical ſurface at the vertex V, and ſuffers no refraction. This is the conjugate focus to R for the two rays RP, RV, and for another ray flowing from R and falling on the ſurface at an equal diſtance on the oppoſite ſide to P. In ſhort, it is the conjugate focus for all the rays flowing from R, and falling on the ſpherical ſurface in the circumference of a circle, deſcribed by the revolution of the point P round the axis RVCF; that is, of all the rays which occupy the conical ſurface deſcribed by the revolution of RP, and the refracted rays occupy the conical ſurface produced by the revolution of PF. But no other rays flowing from R are collected at F; for it appeared in the demonſtration of that propoſition, that rays incident at a greater diſtance from the axis RC were collected at a point between C and F; and then the rays which are incident on the whole arch PC, or the ſpherical ſurface generated by its revolution round RC, although they all croſs the axis RC, are diffuſed over a certain portion of it, by what has been called the aberration of figure. It is called alſo (but improperly) the *aberration from the geometrical focus*, by which is meant the focus of an infinitely ſlender pencil of rays, of which the middle ray (or axis of the pencil) occupies the lens RC, and ſuffers no refraction. But there is no ſuch focus. But if we make m RV—n RC : m RV=VC : VF, the point F is called the geometrical focus, and is the remoteſt limit from C of all the foci (equally geometrical) of rays flowing from R. The other limit is eaſily determined by conſtructing the problem for the extreme point of the given arch.

536. It is evident from the conſtruction, that while the point of incidence P is near to V, the line CK increaſes but very little, and therefore CF diminiſhes little, and the refracted rays are but little diffuſed from F; and therefore they are much denſer in its vicinity than any other point of the axis. It will ſoon be evident that they are incomparably denſer. It is on this account that the point F has been called the *conjugate focus* κατ' ἐξοχήν, to R, and the geometrical focus and the diffuſion has been called *aberration*. A geometrical point R is thus repreſented by a very ſmall circle (or phyſical point, as it is improperly called) at F, and F has drawn the chief attention. And as, in the performance of optical inſtruments, it is neceſſary that this extended repreſentation of a mathematical point R be very ſmall, that it may not ſenſibly interfere with the repreſentations of the points adjacent to R, and thus cauſe indiſtinct viſion, a limit is thus ſet to the extent of the refracting ſurface, which muſt be employed to produce this repreſentation. But this evidently diminiſhes the quantity of light, and renders the viſion *obſcure*, though diſtinct. Artiſts have therefore endeavoured to execute refracting ſurfaces of forms not ſpherical, which collect accurately to one point the light iſſuing from another, and the mathematicians have furniſhed them with forms having this property; but their attempts have been fruitleſs. Spherical ſurfaces are the only ones which can be executed with accuracy. All are done by grinding

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the refracting substance in a mould of proper materials. When this is spherical, the two work themselves, with moderate attention, into an exact sphere; because if any part is more prominent than another, it is ground away, and the whole gets of necessity one curvature. And it is astonishing to what degree of accuracy this is done. An error of the millionth part of an inch would totally destroy the figure of a mirror of an inch focal distance, so as to make it useless for the coarsest instrument. Therefore all attempts to make other figures are given up. Indeed other reasons make them worse than spherical, even when accurately executed. They would not collect to accurate focuses the rays of oblique pencils.

537. It is evident from these observations, that the theory of aberrations is absolutely necessary for the successful construction of optical instruments. Here we shall show the *general* nature and effects of it in optical instruments, and in some of the more curious phenomena of nature. Under the article TELESCOPE the subject will be resumed, in such a manner as to enable the reader, with a moderate share of mathematical knowledge, not only to understand how aberrations are increased and diminished, but also how, by a proper employment of contrary aberrations, their hurtful effects may be *almost entirely* removed in all important cases. In the present general sketch, will be pointed out the maxims of construction of the greatest part of optical instruments, which generally produce their effects by means of pencils of rays which are either out of the axis altogether, or are oblique to it; cases which are seldom considered in elementary treatises of optics.

538. Let PV*v* (*Pl.* CCLIX, *fig.* 1.) be a spherical surface of a refracting substance (glass for instance), of which C is the centre, and let an indefinitely slender pencil of rays AP *ap* be incident on it, in a direction parallel to a ray CV passing through the centre. It is required to determine the focus *f* of this pencil. Let AP be refracted into BF. Draw CI, CR the lines of incidence and refraction, and CP the radius. Draw RB perpendicular to CP, and B*f* parallel to AP or CV: *f* is the focus of the indefinitely slender pencil, or, more accurately speaking, *f* is the remotest limit from P of the concourse of rays with PF, refracted by points lying without the arch VP, or the nearest limit for rays incident between V and P. Draw the radius C*pc*, the line *pf*; and draw *pg* parallel to P*f*, and P*o* perpendicular to P*f*. It is evident, that if *f* be the focus, *c'pf* is the angle of refraction corresponding to the angle of incidence *apC*, as CP*f* is the angle corresponding to APC. Also PC*p* is the increment of the angle of incidence, and the angle *cpg* is equal to the sum of the angle C'P*f* and C'C*c*, and the angle *gpf* is equal to the angle *pf*P. Therefore *cpf*=C'P*f*+F, C*p*+P*fp*. Therefore PC*p*+P*fp* is the corresponding increment of the angle of refraction. Also, because RP*o*=CP*p* (being right angles) the angle *p*P*o*=RPC, and P*o*: P*p* =PR: PC.

539. Therefore, by a preceding *Lemma* (§ 232, &c.) we have PC*p*+P*fp*: PC*p*=tan. ref.: tan. incid.=T, R; T, I; and P*fp*: PC*p*=T, R—T, I: T, I,=diff.: T, I; but P*fp*: PC*p*=$\frac{Po}{Pf}$: $\frac{Pp}{Pc}$ =$\frac{PR}{Pf}$: $\frac{PC}{PC}$,=PR: P*f*,=DR: DB (because DP is parallel to B*f* by construction)=tan. CPR—tan. CPI: tan. CPI. Now CPI is the angle of incidence; and therefore CPR is the angle properly corresponding to it as an angle of refraction, and the point *f* is properly determined.

540. Hence the following rule: As the difference of the tangents of incidence and refraction is to the tangent of incidence, so is the radius of the surface multiplied by the cosine of refraction to the distance of the focus of an infinitely slender pencil of parallel incident rays.

541. *N. B.* We here consider the *cosine of refraction* as a *number*. This was first done by the celebrated EULER, and is one of the greatest improvements in mathematics which the 18th century can boast of. The sines, tangents, secants, &c. are considered as fractional numbers, of which the radius is unity. Thus, CP × sin. 30°, is the same thing with $\frac{1}{2}$CP, or $\frac{CP}{2}$. And in like manner, CB, drawn perpendicular to the axis × sin. 19° 28′ 16″ 32‴ is the same thing with $\frac{1}{3}$ of CB. Also $\frac{CB}{\text{cos. } 60°}$ is the same thing with twice CB, &c. In this manner, BE=BC × sin. BCE, and also BE=CE × tan. BCE, and CB=CE × sec. BCE, &c. &c. This manner of considering the lines which occur in geometrical constructions is of immense use in all parts of mixed mathematics; and nowhere more remarkably than in optics, the most beautiful example of them.

542. *Corol.* 1. The distance of *f*G of this lateral focus from the axis CV (that is, from the line drawn through the centre parallel to the incident light) is proportional to the cube of the semi-aperture PH of the spherical surface. For *f*G=BE. Now BE=CB × sin. BCE, = CB × sin. CPA; and CB = RC × cos. RCB, = RC × sin. CPR, and RC = CP × sin. CPR: Therefore BE = PC × sin.^{2}CPR × sin. PCA, =PC × sin.^{2} refr. × sin. incid. but sin.^{2} refr. = $\frac{m^2}{n^2}$ sin.^{2} incid. Therefore, finally, BE, or *f*G=PC × $\frac{m^2}{n^2}$ × sin.^{3} incid: But PC. sin. incid. is evidently PH the semi-aperture; therefore the proposition is manifest.

543. *Corol.* 2. Now let this slender pencil of rays be incident at the vertex V. The focus will now be a point F in the axis, determined by making CV: CF=*m*—*n*: *m*. Let the incident pencil gradually recede from the axis CF, still, however, keeping parallel to it. The focus *f* will always be found in a curve line DC'F, so constituted that the ordinate G will be as the cube of the line PH, perpendicular to the axis intercepted between the axis and that point of the surface which is cut by a tangent to the curve in *f*. All the refracted rays will be tangents to this curve, and the adjacent rays will cross each other in these lateral foci *f*; and will therefore be incomparably more dense along the curve than anywhere within its area. This is finely illustrated by receiving on white paper,

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Fig. 2.

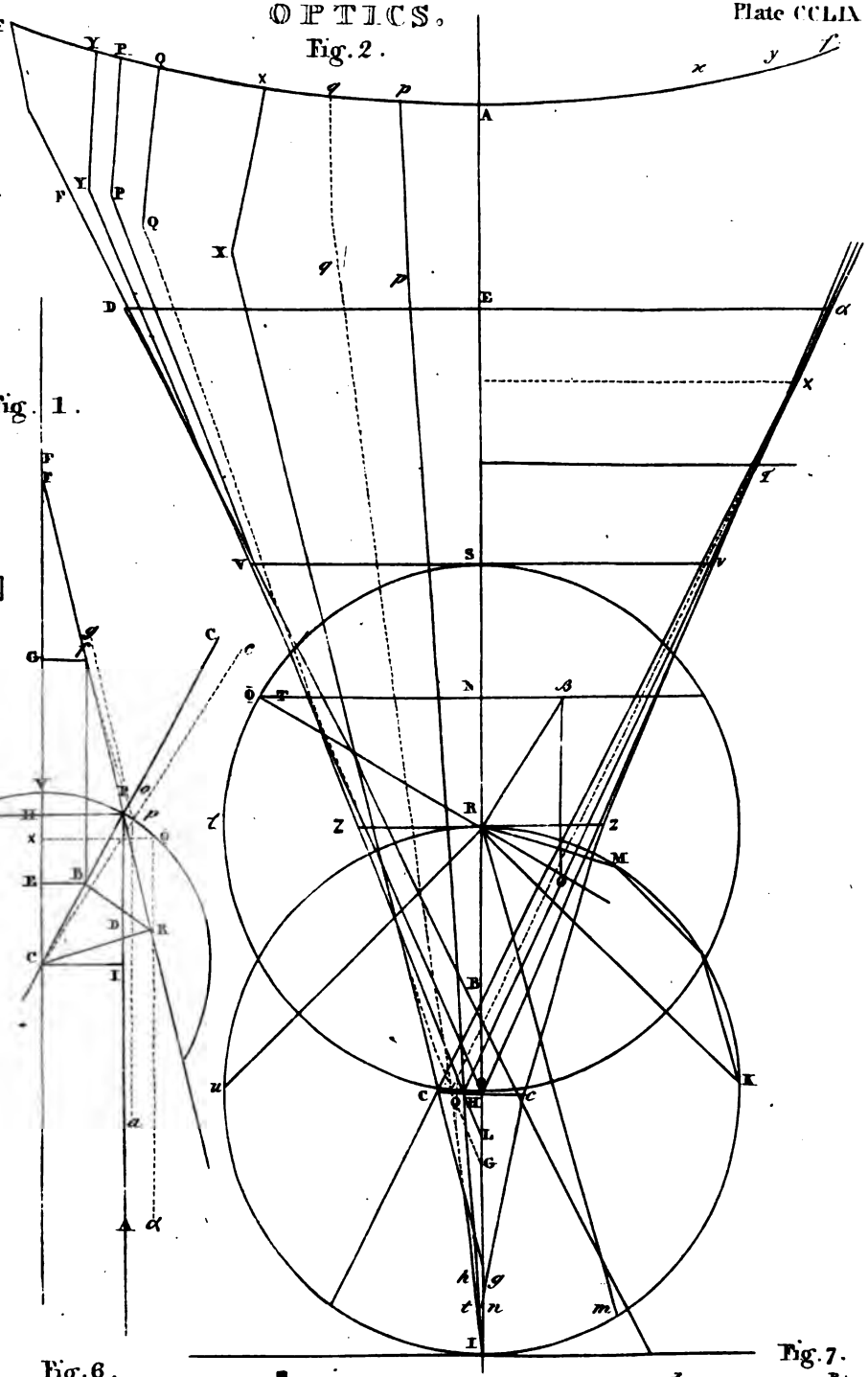

Fig. 4.

Fig. 1.

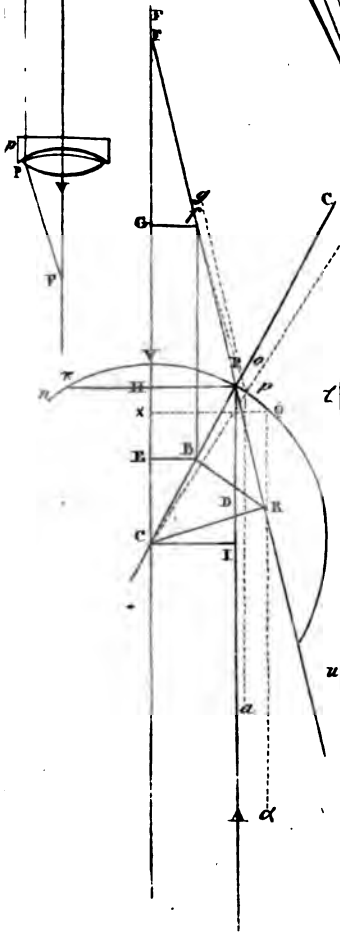

Fig. 6.

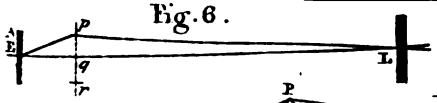

Fig. 7.

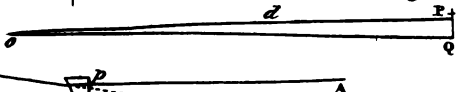

Fig. 3.

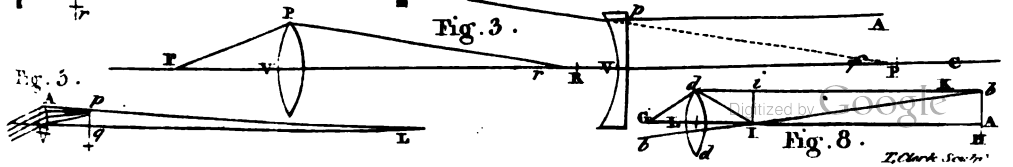

Fig. 5.

Fig. 8.

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per, the light of the ſun refracted through a globe, or cylinder of glaſs filled with water. If the paper is held parallel to the axis of the cylinder, and cloſe to it, the illuminated part will be bounded by two very bright parallel lines, where it is cut by the curve; and theſe lines will gradually approach each other as the paper is withdrawn from the veſſel, till they coaleſce into one very bright line at F, or near it. If the paper be held with its end touching the veſſel, and its plane nearly perpendicular to the axis, the whole progreſs of the curve will be diſtinctly ſeen.

544. As ſuch globes were uſed for burning-glaſſes, the point of greateſt condenſation (which is very near but not exactly in F) was called the *focus*. When theſe curves were obſerved by Mr TCHIRNHAUSS, he called them *cauſtics*; and thoſe formed by refraction he called *diacauſtics*, to diſtinguiſh them from the *catacauſtics* formed by reflection. It is ſomewhat ſurpriſing, that theſe curves have been ſo little ſtudied ſince the time of Tchirnhauſs. The doctrine of aberrations has indeed been conſidered in a manner independent on their properties. But whoever conſiders the progreſs of rays in the eye-piece of optical inſtruments, will ſee that the knowledge of the properties of diacauſtic curves determines directly, and almoſt accurately, the foci and images that are formed there. For let the object-glaſs of a teleſcope or microſcope be of any dimenſions, the pencils incident on the eye-glaſſes are almoſt all of this evaneſcent bulk. Theſe advantages will be ſhown in their proper places: we proceed at preſent to conſider the aberrations of parallel incident rays.

544. From the inſtance repreſented by the figure, it is evident that the cauſtic will touch the ſurface in a point φ, ſo ſituated that $c\varphi : \varphi\chi = m : n$. The refracted ray $\varphi\Phi$ will touch the ſurface, and will croſs the axis in Φ, the neareſt limit of diffuſion along the axis. If the ſurface is of ſmaller extent, as PV, the cauſtic begins at *f*, when the extreme refracted ray P *f* touches the cauſtic and croſſes the axis in F', and the oppoſite branch of the cauſtic in K. If there be drawn an ordinate KO *k* to the cauſtic, it is evident that the whole light incident on the ſurface PV II paſſes through the circle whoſe diameter is K *k*, and that the circle is the ſmalleſt ſpace which receives *all* the refracted light.

546. It is of great importance to conſider the manner in which the light is diſtributed over the ſurface of this circle of ſmalleſt diffuſion; for this is the repreſentation of one point of the infinitely diſtant radiant object. Each point of a planet, for inſtance, is repreſented by this little circle; and as the circles repreſenting the different adjacent points muſt interfere with each other, an indiſtinctneſs muſt ariſe, ſimilar to what is obſerved when we view an object through a pair of ſpectacles which do not fit the eye. The indiſtinctneſs muſt be in proportion to the number of points whoſe circles of diffuſion interfere; that is, to the area of theſe circles, provided that the light is uniformly diffuſed over them: but if it be very rare at the circumference, the impreſſion made by the circles belonging to the adjacent points muſt be leſs ſenſible. Accordingly Sir ISAAC NEWTON, ſuppoſing it incomparably rarer at the circumference than towards the centre, affirms, that the indiſtinctneſs of teleſcopes, ariſing from the ſpherical figure of the object-glaſs, was ſome thouſand times leſs than that ariſing from the unequal refrangibility of light; and therefore, that the attempts to improve them by diminiſhing or removing this aberration were needleſs, while the indiſtinctneſs from unequal refrangibility remained. It is ſurpriſing, that a philoſopher ſo eminent for ſagacity and for mathematical knowledge ſhould have made ſuch a miſtake, and unfortunate that the authority of his great name hindered others from examining the matter, truſting to his aſſertion, that the light was ſo rare at the border of this circle. His miſtake is ſurpriſing, becauſe the very nature of a cauſtic ſhould have ſhowed him, that the light was infinitely denſer at the borders of the circle of ſmalleſt diffuſion. The firſt perſon who detected this overſight of the Britiſh philoſopher was the Abbe BOSCOVICH, who, in a diſſertation publiſhed at Vienna in 1767, ſhowed, by a very beautiful analyſis, that the diſtribution was extremely different from what Newton had aſſerted, and that the ſuperior indiſtinctneſs ariſing from unequal refrangibility was incomparably leſs than he had ſaid. We ſhall attempt to make this delicate and intereſting matter conceivable by thoſe who have but ſmall mathematical preparation.

547. Let the curve DVZCI $c\,z\,v\,d$ (*fig.* 2. *Pl.* CCLIX.) be the cauſtic (magnified), EI its axis, I the focus of central rays, B the focus of extreme rays, and IB the line containing the foci of all the intermediate rays, and CO c the diameter of the circle of ſmalleſt diffuſion. It is plain, that from the centre O there can be drawn two rays OV, O v, touching the cauſtic in V, v. Therefore the point O will receive the ray EO, which paſſes through the vertex of the refracting ſurface, and all the rays which are incident on the circumference of a circle deſcribed on the refracting ſurface by the extremity of the ray OV, or O v. The denſity of the light at O will therefore be indefinitely great. From the point C there can be drawn two rays; one of them CX touching the cauſtic in C, and the other C, touching it at *d* on the oppoſite ſide. The rays which touch the cauſtic in the immediate vicinity of C, both in the arch CV and the arch CI will cut OC in points indefinitely near to each other; becauſe their diſtance from each other in the line OC will be to their uniform diſtance on the refracting ſurface, as the diſtance between their points of contact with the cauſtic to the diſtance of theſe points from the refracting ſurface. Here therefore at C the denſity of the light will alſo be indefinitely great. From any point H, lying between O and C, may be drawn three rays. One of them, LHT, P, touching the arch CD of the cauſtic in T, cutting the refracting ſurface in P, and the axis in L: another *t* H ρ, touching the arch CI of the cauſtic in *t*. The third is $H\,\tau\,\varpi$, touching the arch $c\,d$ of the oppoſite branch of the cauſtic in τ.

548. It will greatly aſſiſt our conceptions of this ſubject, if we conſider a ray of light from the refracting ſurface as a thread attached at I of this figure, or at F of *fig.* 1. *Pl.* CCLIX. and gradually unlapped

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unlapped from the caustic DNCI on one side, and then lapped on the oppoſite branch I c v d; and attend to the point of its interſection with the diameter c QC of the circle of ſmalleſt diffuſion. Therefore, 1. let the ray be firſt ſuppoſed to paſs through the refracting ſurface at F, the right hand extremity of the aperture. The thread is then folded up on the whole right hand branch ICVD of the caustic; and if the ſtraight part of it FD be produced, it will cut the diameter of the circle of ſmalleſt diffuſion in the oppoſite extremity c. Or ſuppoſe a ruler, in place of the thread, applied to the caustic at D and to the refracting ſurface at F, the part of it Dc, which is detached from the caustic, cuts CO c in the point c. 2. Now ſuppoſe the ruler to revolve gradually, its extremity moving acroſs the arch FAf of the refracting ſurface, while the edge is applied to the caustic; the point of contact with the caustic will ſhift gradually down the branch DV of the caustic, while its edge paſſes acroſs the line c C; and when the point of contact arrives at V, the extremity will be at Y on the refracting ſurface, and the interſection of the edge will be at O. 3. Continuing the motion, the point of contact ſhifts from V to Z, the extremity from Y to Q', and the interſection from O to Q, ſo that $OQ^2 = \frac{OC^2}{2}$, as will preſently appear. 4. After this, the point of contact will ſhift from Z to C, the extremity from Q' to X, halfway from F to A, as will ſoon be ſhown, and the interſection from Q to C. 5. The point of contact will now ſhift from C down to I, the extremity will paſs from X to A, and the interſection will go back from C to O. 6. The ruler muſt now be applied to the other branch of the caustic I c z v d, and the point of contact will aſcend from I to c, the extremity will paſs from A to x, half way to f from A, and the interſection from O to c. 7. The point of contact will aſcend from C to z; the extremity paſſes from x to q', and the interſection from C to q, Oq² being $= \frac{Oc^2}{2}$. 8. While the contact of the ruler and caustic ſhifts from z to v, the extremity ſhifts from q' to y, and the interſection from q to O. 9. The contact riſes from v to d, the extremity paſſes from y to f, and the interſection from O to C; and then the motion acroſs the refracting ſurface is completed, the point of contact ſhifting down from D to I, along the branch DVZCI, and then aſcending along the other branch I c z v d, while the interſection paſſes from c to C, back again from C to c, and then back again from c to C, where it ends, having thrice paſſed through every intermediate point of c C.

549. We may form a notion of the DENSITY of the LIGHT in any point H, by ſuppoſing the incident light of uniform denſity at the refracting ſurface, and attending to the conſtipation of the rays in the circle of ſmalleſt diffuſion. Their vicinity may be eſtimated both in the direction of the radii OH, and in the direction of the circumference deſcribed by its extremity H, during its revolution round the axis; and the denſity muſt be conceived as proportional to the *number* of originally equidiſtant rays, which are collected into a ſpot of given area. Theſe have been collected from a correſponding ſpot or area of the refracting ſurface; and as the number of rays is the ſame in both, the denſity at H will be to the denſity of the refracting ſurface, as the area occupied of the refracting ſurface to the correſponding area at H. The vicinity of the rays in the direction of the radius depends on the proportion between PT and TH. For the ray adjacent to PTH may be ſuppoſed to croſs it at the point of contact T; and therefore the uniform diſtance between them at the ſurface of that medium is to the diſtance between the ſame rays at H as the diſtance of T from the refracting ſurface to its diſtance from H. Therefore the number of rays which occupy a tenth of an inch, for example, of the radius AP, is to the number which would occupy a tenth of an inch at H as TH to TP; and the radical denſity at P, is to the radical denſity at H alſo, as TH to TP.—In the next place, the circumferential denſity at P is to that at H, as the radius AP to the radius OH. For ſuppoſing the figure to turn round its axis AI, the point P of the refracting ſurface will deſcribe a circumference whoſe radius is AP, and H will deſcribe a circumference whoſe radius is OH; and the whole rays, which paſs through the firſt circumference, paſs alſo through the laſt; and therefore their circumferential denſities will be the inverſe proportion of the ſpaces into which they are collected. Now the radius AP is to the radius OH as AL to OL; and circumferences have the ſame proportion with their radii. Therefore the circumferential denſity at P is to that in H as AL to OL inverſely; and it was found, that the radical denſity was as AN to ON inverſely, being as TH to TP, which are very nearly in this ratio. Therefore the abſolute denſity (or number of rays collected in a given ſpace) at P will be to that at H, in the ratio compounded of theſe ratios; that is, in the ratio of ON × OL to AN × AL. But as NL bears but a very ſmall ratio to AN or AL, AN × AL may be taken as equal to AO² without any ſenſible error. It never differs from it in teleſcopes ſooth part, and is generally incomparably ſmaller. Therefore the denſity at H may be conſidered as proportional to ON × OL inverſely. And it will afterwards appear that NS is = ¾ L. Therefore the denſity at H is inverſely as ON × NS.

550. Now deſcribe a circle on the diameter OS, and draw NTφ cutting the circumference $N\varphi^2 = ON \times NS$, and the denſity at H is as $N\varphi^2$ inverſely. This gives us a very eaſy eſtimation of the denſity, viz. draw a line from the point of contact of the ray which touches the part VC of the caustic, and the denſity is the inverſe ſubduplicate ratio of the part of this line intercepted between the axis and the circumference SφO. It will afterwards appear that the denſity correſponding to this ray is one half of the denſity correſponding to all the three: or a better expreſſion will be had for the denſity at H by drawing Rβ perpendicular to Rφ, and β o perpendicular to φ β, making φ R in o; then φ o is as $\frac{1}{\varphi N^2}$, or is proportional to the denſity, as is evident. When H is at O, N is at S, and φ o is infinite. As H moves from O, N deſcends, and φ o diminiſhes, till H comes to Q, and T to z, and φ to ζ, and o to R. When H moves

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moves from Q towards C, T descends below $\frac{1}{2}s$; $\rho\sigma$ again increases, till it is again infinite, when H is at C, T at C, and N at O. Thus it appears, without any minute consideration, that the light has a density indefinitely great in the centre O; that the density decreases to a minimum in some intermediate point Q, and then increases again to infinity at the margin C. Hence it follows, that the indistinctness arising from the spherical figure of the refracting surfaces is incomparably greater than Newton supposed; and that the valuable discovery of Mr Dollond of achromatic lenses, must have failed of answering his fond expectations, if his very method of producing them had not, at the same time, enabled him to remove that other indistinctness, by employing contrary aberrations. And now, since the discoveries by Dr Blair of substances which disperse the different colours in the same proportions, but very different degrees, has enabled us to employ much larger portions of the sphere than Mr Dollond could introduce into his object-glasses, it becomes absolutely necessary to study this matter completely, in order to discover and ascertain the amount of the errors which perhaps unavoidably remain.

551. This slight sketch of the most simple case of aberration, namely, when the incident rays are parallel, will serve to give a general notion of the subject; and the reader can now see how contrary aberrations may be employed in order to form an ultimate image which shall be as distinct as possible. For let it be proposed to converge parallel rays accurately to the focus F, (*fig.* 3. *pl.* CCLIX.) by the refraction of spherical surfaces of which V is the vertex. Let PV be a convex lens of such a form that rays flowing from F, and passing through it immediately round the vertex V, are collected to the conjugate focus R, while the extreme ray FP, incident on the margin of the lens P, is converged to *r*, nearer to V, having the longitudinal aberration Rr. Let ρV be a plano-concave lens, of such sphericity that a ray Aρ, parallel to the axis CV, and incident on the point ρ, as far from its vertex V as P in the other lens is from its vertex, is dispersed from *r*, the distance ρV being equal to *r*V, while the central rays are dispersed from P, as far from V as R is from V. It is evident, that if these lenses be joined as in *fig.* 4. a ray A'ρ, parallel to the common axis CV, will be collected at the distance VF equal to VF in *fig.* 4. and that rays passing through both lenses in the neighbourhood of the axis will be collected at the same point F.

552. This compound lens is said to be without spherical aberration; and it is true that the central and the extreme rays are collected in the same point F; but the rays which fall on the lens between the centre and margin are a little diffused from F, and it is not possible to collect them all to one point. For in the rules for computing the aberration, quantities are neglected which do not preserve (in different apertures) the same ratio to the quantities retained. The diffusion is least when the aberration is corrected, not for the very extremity, but for a certain intermediate point (varying with the aperture, and having no known ratio to it); and when this is done the compound lens is in its state of greatest perfection, and the remaining aberration is quite insensible.

Sect. III. *Of* Optical Instruments.

553. For the construction of optical instruments. See Telescope.—Of the mechanism of these instruments particular accounts are given in this work under their respective denominations. But as it belongs to the science of optics to explain, by the laws of refraction and reflection, the several phenomena which these instruments exhibit, we must in this place enumerate the instruments themselves, omitting entirely, or stating very briefly, such facts as are stated at large in other places. In this enumeration we begin with the *multiplying glass*, not because it is first in importance, but that it may not intervene between instruments more useful, and which have a mutual relation to one another.

§ I. *Of the* Multiplying Glass.

554. The multiplying glass is made by grinding down the round side *b i b* (*Fig.* 7. *Pl.* CCLVIII.) of a plano-convex glass AB, into several flat surfaces, as *h b*, *b l d*, *d k*. An object C will not appear magnified when seen through this glass by the eye at H; but it will appear multiplied into as many different objects as the glass contains plane surfaces. For, since rays will flow from the object C to all parts of the glass, and each plane surface will refract these rays to the eye, the same object will appear to the eye in the direction of the rays which enter it through each surface. Thus, a ray *g i* H, falling perpendicularly on the middle surface, will go through the glass to the eye without suffering any refraction; and will therefore show the object in its true place at C: whilst a ray *a b* flowing from the same object, and falling obliquely on the plane surface *b h*, will be refracted in the direction *b e*, by passing through the glass; and, upon leaving it, will go on to the eye in the direction *e* H; which will cause the same object C to appear also at E, in the direction of the ray H *e*, produced in the right line H *e n*. And the ray *c f*, flowing from the object C, and falling obliquely on the plane surface *d k*, will be refracted (by passing through the glass, and leaving it at *f*) to the eye at H; which will cause the same object to appear at D, in the direction H *f m*.—If the glass be turned round the line *g i* H, as an axis, the object C will keep its place, because the surface *b l d* is not removed; but all the other objects will seem to go round C, because the oblique planes, on which the rays *a b c d* fall, will go round by the turning of the glass.

§ II. *Of* Mirrors.

555. There are 3 mirrors principally used in optical experiments, (See Catoptrics, *Index.*) the plane mirror, the spherical convex mirror, and the spherical concave mirror. Of these the plane mirror first claims our attention, as it is more common, and undoubtedly more ancient, than the other two. It has been said that the image reflected by this mirror appears as far behind the surface as the object is before it; that the image will appear of the same size, and in the same position with the object; that every such mirror will reflect an image twice its own length and breadth; and that in certain circumstances it will reflect several images of the same object. For these phenomena we shall endeavour to account by the laws of reflection.

556.

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556. Let AB (*fig.* 8, *pl.* CCLVIII.) be an object before the reflecting surface *ghi* of the plane mirror CD; and let the eye be at *o*. Let A*h* be a ray of light flowing from the top A of the object, and falling upon the mirror at *h*, and *hm* be a perpendicular to the surface of the mirror at *h*; the ray A*h* will be reflected from the mirror to the eye at *o*, making an angle *mho* equal to the angle A*hm*: then will the top of the image E appear to the eye in the direction of the reflected ray *hb* produced to E, where the right line A*p*E, from the top of the object, cuts the right line *o*bE, at E. Let B*i* be a ray of light proceeding from the foot of the object at B to the mirror at *i*; and *ni* a perpendicular to the mirror from the point *i*, where the ray B*i* falls upon it: this ray will be reflected in the line *io*, making an angle *nio* equal the angle B*in*, with that perpendicular, and entering the eye at *o*; then will the foot F of the image appear in the direction of the reflected ray *oi*, produced to F, where the right line BF cuts the reflected ray produced to F. All the other rays that flow from the intermediate points of the object AB, and fall upon the mirror between *h* and *i*, will be reflected to the eye at *o*; and all the rays that flow from the object, and fall upon the mirror below *i*, will be reflected back below the eye at *o*; so that none of the rays that fall above *h*, or below *i*, can be reflected to the eye at *o*; and the distance between *h* and *i* is equal to half the length of the object AB. Hence it appears, that if a man sees his whole image in a plane looking-glass, the part of the glass that reflects his image must be just half as long and half as broad as himself, let him stand at any distance from it whatever; and that his image must appear just as far behind the glass as he is before it. Thus, the man AB (*fig.* 9. *pl.* CCLVIII.) viewing himself in the plane mirror CD, which is just half as long as himself, sees his whole image as at EF, behind the glass, exactly equal to his own size. For a ray AC proceeding from his eye at A, and falling perpendicularly upon the surface of the glass at C, is reflected back to his eye, in the same line CA; and the eye of his image will appear at E, in the same line produced to E, beyond the glass. And a ray BD, flowing from his foot, and falling obliquely on the glass at D, will be reflected as obliquely on the other side of the perpendicular *ab* D, in the direction DA; and the foot of his image will appear at F, in the direction of the reflected ray AD, produced to F, where it is cut by the right line BGF, drawn parallel to the right line ACE. Just the same as if the glass were taken away, and a real man stood at F, equal in size to the man standing at B: for to his eye at A, the eye of the other man at E would be seen in the direction of the line ACE; and the foot of the man at F would be seen by the eye A, in the direction of the line ADF. If the glass be brought nearer the man AB, as suppose to *cb*, he will see his image as at CDG: for the reflected ray CA (being perpendicular to the glass) will show the eye of the image as at C; and the incident ray B*b*, being reflected in the line *b*A, will show the foot of his image as at G; the angle of reflection *abA* being always equal to the angle of incidence B*ba*: and so of all the intermediate rays from A to B. Hence, if the man AB advances towards the glass CD, his image will approach towards it; and if he recedes from the glass, his image will also recede from it.

557. If the object be placed before a common looking-glass, and viewed obliquely, three, four, or more images of it, will appear behind the glass. To explain this, let ABCD (*fig.* 10. *pl.* CCLVIII.) represent the glass; and let EF be the axis of a pencil of rays flowing from E, a point in an object situated there. The rays of this pencil will in part be reflected at F, suppose into the line FG. What remains will (after refraction at F, which we do not consider here) pass on to H; from whence (on account of the quicksilver which is spread over the second surface of glasses of this kind, to prevent any of the rays from being transmitted there) they will be strongly reflected to K, where part of them will emerge and enter an eye at L. By these means one representation of the said point will be formed in the line LK produced, suppose in M: Again, another pencil, whose axis is EN, first reflected at N, then at O, and afterwards at P, will form a second representation of the same point at Q: And thirdly, another pencil, whose axis is ER, after reflection at the several points R, S, H, T, V, successively, will exhibit a third representation of the same point at X; and so on *in infinitum*. The same being true of each point in the object, the whole will be represented in the like manner; but the representations will be faint, in proportion to the number of reflections the rays suffer, and the length of their progress within the glass. We may add to these another representation of the same object in the line LO produced, made by such of the rays as fall upon O, and are from thence reflected to the eye at L. This experiment may be tried by placing a candle before the glass as at E, and viewing it obliquely as from L.

558. *Of* CONCAVE *and* CONVEX MIRRORS. The effects of these in magnifying and diminishing objects have been already in general explained; but for the better understanding the nature of reflecting telescopes, it will still be proper to subjoin the following particular description of the effects of concave ones.

559. When parallel rays (*fig.* 11, *pl.* CCLVIII.) as *dfa*, C*mb*, *elc*, fall upon a concave mirror AB (which is not transparent, but has only the surface A*b*B of a clear polish), they will be reflected back from that mirror, and meet in a point *m*, at half the distance of the surface of the mirror from C, the centre of its concavity; for they will be reflected at as great an angle from a perpendicular to the surface of the mirror, as they fell upon it with regard to that perpendicular, but on the other side thereof. Thus, let C be the centre of concavity of the mirror A*b*B; and let the parallel rays *dfa*, C*mb*, and *elc*, fall upon it at the points *a*, *b*, and *c*. Draw the lines C*ia*, C*mb*, and C*bc*, from the centre C to these points; and all these lines will be perpendicular to

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to the surface of the mirror, because they proceed thereto like so many radii or spokes from its centre. Make the angle C *a h* equal to the angle *d a* C, and draw the line *a m b*, which will be the direction of the ray *d f a*, after it is reflected from the point *a* of the mirror; so that the angle of incidence *d a* C is equal to the angle of reflection C *a b*; the rays making equal angles with the perpendicular C *i a* on its opposite sides. Draw also the perpendicular C *h c* to the point *c*, where the ray *e l c* touches the mirror; and having made the angle C *c i* equal to the angle C *c e*, draw the line *c m i*, which will be the course of the ray *e l c*, after it is reflected from the mirror. The ray C *m b* passing through the centre of concavity of the mirror, and falling upon it at *b*, is perpendicular to it; and is therefore reflected back from it in the same line *b m* C. All these reflected rays meet in the point *m*; and in that point the image of the body which emits the parallel rays *d a*, C *b*, and *e c*, will be formed; which point is distant from the mirror equal to half the radius *b m* C of its concavity.

560. The rays which proceed from any celestial object may be esteemed parallel at the earth; and therefore the image of that object will be formed at *m*, when the reflecting surface of the concave mirror is turned directly towards the object. Hence the focus *m* of parallel rays is not in the centre of the mirror's concavity, but half way between the mirror and that centre. The rays which proceed from any remote terrestrial object are nearly parallel at the mirror; not strictly so, but come diverging to it, in separate pencils, or as it were bundles of rays, from each point of the side of the object next the mirror; and therefore they will not be converged to a point at the distance of half the radius of the mirror's concavity from its reflecting surface, but into separate points at a little greater distance from the mirror. And the nearer the object is to the mirror, the farther these points will be from it; and an inverted image of the object will be formed in them, which will seem to hang pendant in the air; and will be seen by an eye placed beyond it (with regard to the mirror) in all respects like the object, and as distinct as the object itself.

561. Let A *c* B (*fig.* 12. *pl.* CCLVIII.) be the reflecting surface of a mirror, whose centre of concavity is at C; and let the upright object DE be placed beyond the centre C, and send out a conical pencil of diverging rays from its upper extremity D, to every point of the concave surface of the mirror A *c* B. But, to avoid confusion, we only draw three rays of that pencil, as DA, D *c*, DB. From the centre of concavity C draw the three right lines CA, C *c*, CB, touching the mirror in the same points where the foresaid rays touch it; and all these lines will be perpendicular to the surface of the mirror. Make the angle CA *d* equal to the angle DAC, and draw the right line A *d* for the course of the reflected ray DA: make the angle C *c d* equal to the angle D *c* C, and draw the right line *c d* for the course of the reflected ray D *d*: make also the angle CB *d* equal to the angle DBC, and draw the right line B *d* for the course of the reflected ray DB. All these reflected rays will meet in the point *d*, where they will form the extremity *d* of the inverted image *e d*, similar to the extremity D of the upright object DE. If the pencil of rays E *f*, E *g*, E *h*, be also continued to the mirror, and their angles of reflection from it be made equal to their angles of incidence upon it, as in the former pencil from D, they will all meet at the point *e* by reflection, and form the extremity *e* of the image *e d* similar to the extremity E of the object DE. And as each intermediate point of the object, between D and E, sends out a pencil of rays in like manner to every part of the mirror, the rays of each pencil will be reflected back from it, and meet in all the intermediate points between the extremities *e* and *d* of the image; and so the whole image will be formed, not at *i*, half the distance of the mirror from its centre of concavity C, but at a greater distance, between *i* and the object DE; and the image will be inverted with respect to the object.

562. When the object is more remote from the mirror than its centre of concavity C, the image will be less than the object, and between the object and mirror; when the object is nearer than the centre of concavity, the image will be more remote and bigger than the object. Thus, if RD be the object, *d e* will be its image: for, as the object recedes from the mirror, the image approaches nearer to it; and as the object approaches nearer to the mirror, the image recedes farther from it, on account of the lesser or greater divergency of the pencils of rays which proceed from the object; for the less they diverge the sooner they are converged to points by reflection; and the more they diverge, they farther they must be reflected before they meet. If the radius of the mirror's concavity, and the distance of the object from it, be known, the distance of the image from the mirror is found by this rule: Divide the product of the distance and radius by double the distance made less by the radius, and the quotient is the distance required. If the object be in the centre of the mirror's concavity, the image and object will be coincident, and equal in bulk. If a man places himself directly before a large concave mirror, but farther from it than its centre of concavity, he will see an inverted image of himself in the air between him and the mirror, of a less size than himself. And if he holds out his hand towards the mirror, the hand of the image will come out towards his hand, and coincide with it, of an equal bulk, when his hand is in the centre of concavity; and he will imagine he may shake hands with his image. If he reaches his hand farther, the hand of the image will pass by his hand, and come between his hand and his body; and if he moves his hand towards either side, the hand of the image will move towards the other; so that whatever way the object moves, the image will move the contrary. All the while a bystander will see nothing of the image, because none of the reflected rays that form it enter his eyes.

§ III. *Of* MICROSCOPES.

563. Under the article MICROSCOPE a copious detail has been given of the construction of those instruments, as they are now made by the most

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eminent artiſts. In that article it fell not within our plan to treat ſcientifically of their magnifying powers; theſe can be explained only by the laws of refraction and reflection, which we ſhall therefore apply to a few microſcopes, leaving our readers to make the application themſelves to ſuch others as they may chuſe to analyze by optical principles.

564. The firſt and ſimpleſt of all microſcopes is nothing more than a very ſmall globule of glaſs, or a convex lens whoſe focal diſtance is extremely ſhort. The magnifying power of this microſcope is thus aſcertained by Dr Smith: "A minute object $p\,q$, ſeen diſtinctly through a ſmall glaſs AE (*fig.* 5. and 6. *pl.* CCLIX.) by the eye put cloſe to it, appears ſo much greater than it would to the naked eye, placed at the leaſt diſtance $q\,L$ from whence it appears ſufficiently diſtinct, as this latter diſtance $q\,L$ is greater than the former $q\,E$; for, having put your eye cloſe to the glaſs EA, in order to ſee as much of the object as poſſible at one view, remove the object $p\,q$ to and fro till it appear moſt diſtinctly, ſuppoſe at the diſtance $E\,q$. Then conceiving the glaſs AE to be removed, and a thin plate with a pin-hole in it to be put in its place, the object will appear diſtinct and as large as before, when ſeen through the glaſs, only not ſo bright. And in this latter caſe it appears ſo much greater than it does to the naked eye at the diſtance $q\,L$, either with the pin-hole or without it, as the angle $p\,E\,q$ is greater than the angle $p\,L\,q$, or as the latter diſtance $q\,L$ is greater than the former $q\,E$. Since the interpoſition of the glaſs has no other effect than to render the appearance diſtinct, by helping the eye to increaſe the refraction of the rays in each pencil, it is plain that the greater apparent magnitude is entirely owing to a nearer view than could be taken by the naked eye. As the human eye is ſo conſtructed, as, for reaſons already aſſigned, to have diſtinct viſion only when the rays which fall upon it are parallel or nearly ſo; it follows, that if the eye be ſo perfect as to ſee diſtinctly by pencils of parallel rays falling upon it, the diſtance $E\,q$, of the object from the glaſs, is then the focal diſtance of the glaſs. Now, if the glaſs be a ſmall round globule, of about one 15th of an inch diameter, its focal diſtance $E\,q$, being three quarters of its diameter, is one 20th of an inch; and if $q\,L$ be eight inches, the diſtance at which we uſually view minute objects, this globule will magnify in the proportion of eight to one 20th, or of 160 to 1.

565. *The* Double *or* Compound Microscope (*fig.* 13. *plate* CCLVIII.) conſiſts of an object-glaſs $c\,d$, and an eye-glaſs $e\,f$. The ſmall object $a\,b$ is placed at a little greater diſtance from the glaſs $c\,d$ than its principal focus; ſo that the pencils of rays flowing from the different points of the object, and paſſing through the glaſs, may be made to converge, and unite in as many points between g and h, where the image of the object will be formed; which image is viewed by the eye through the eye-glaſs $e\,f$. For the eye-glaſs being ſo placed, that the image $g\,h$ may be in its focus, and the eye much about the ſame diſtance on the other ſide, the rays of each pencil will be parallel after going out of the eye-glaſs, as at e and f, till they come to the eye at k, where they will begin to converge by the refractive power of the humours; and after having croſſed each other in the pupil, and paſſed through the cryſtalline and vitreous humours, they will be collected into points on the retina, and form the large inverted image AB thereon.

566. By this combination of lenſes, the aberration of the light from the figure of the glaſs, which in a globule of the kind above-mentioned is very conſiderable, is in ſome meaſure corrected. This appeared ſo ſenſibly to be the caſe, even to former opticians, that they ſoon began to add another lens. The inſtrument, however, receives a conſiderable improvement by the addition of a third lens; for, ſays Mr Martin, it is not only evident, from the theory of this aberration, that the image of any point is rendered leſs confuſed by refraction through two lenſes than by an equal refraction through one; but it alſo follows, from the ſame principle, that the ſame point has its image ſtill leſs confuſed, when formed by rays refracted through three lenſes than by an equal refraction through two; and therefore a third lens added to the other two will contribute to make the image more diſtinct, and conſequently the inſtrument more complete. At the ſame time the field of view is amplified, and the uſe of the microſcope rendered more agreeable by the addition of the other lens. Thus alſo we may allow a ſomewhat larger aperture to the object lens, and thereby increaſe the brightneſs of objects, and greatly heighten the pleaſure of viewing them. For the ſame reaſon, Mr Martin made a four-glaſs microſcope, which anſwers the purpoſes of magnifying and of diſtinct viſion ſtill more perfectly.

567. The magnifying power of double microſcopes is eaſily underſtood, thus: The glaſs L next the object PQ (*fig.* 14, *plate* CCLVIII.) is very ſmall, and very much convex, and conſequently its focal diſtance LF is very ſhort; the diſtance LQ of the ſmall object PQ is but a little greater than LF: Greater it muſt be, that the rays flowing from the object may converge after paſſing through the glaſs, and, croſſing one another, form an image of the object; and it muſt be but a little greater, that the image $p\,q$ may be at a great diſtance from the glaſs, and conſequently much larger than the object itſelf. This picture $p\,q$, being viewed through a convex glaſs AE, whoſe focal diſtance is $q\,E$, appears diſtinct as in a teleſcope. Now the object appears magnified upon two accounts; firſt, becauſe, if we viewed its picture $p\,q$ with the naked eye, it would appear as much greater than the object, at the ſame diſtance, as it really is greater than the object, or as much as $L\,q$ is greater than LQ: and, 2dly, becauſe this picture appears magnified through the eye-glaſs, as much as the leaſt diſtance, at which it can be ſeen diſtinctly with the naked eye, is greater than $q\,E$, the focal diſtance of the eye-glaſs. For example, if this latter ratio be five to one, and the former ratio of $L\,q$ to LQ be 20 to one, then, upon both accounts, the object will appear 5 times 20, or 100 times greater than to the naked eye. *Fig.* 1, *Plate* CCLX. repreſents the ſection of a compound microſcope with 3 lenſes.

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Fig. 1.

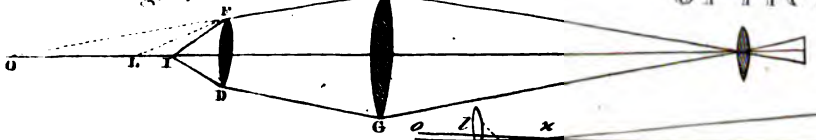

Fig. 2.

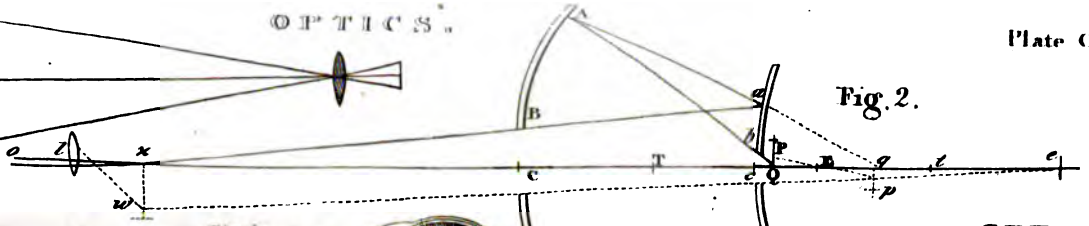

Fig. 3.

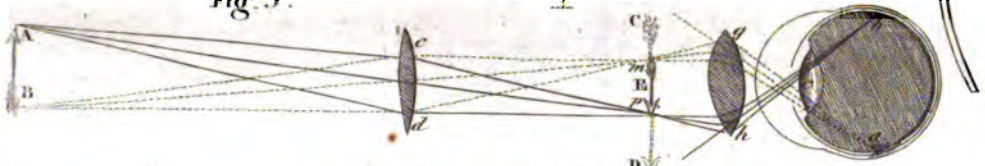

Fig. 4.

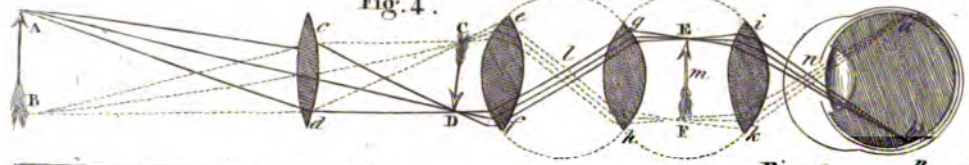

Fig. 5.

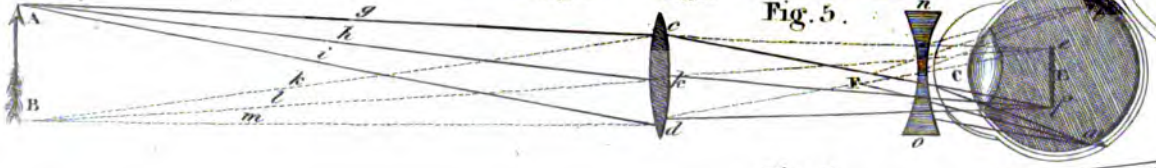

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Fig. 8.

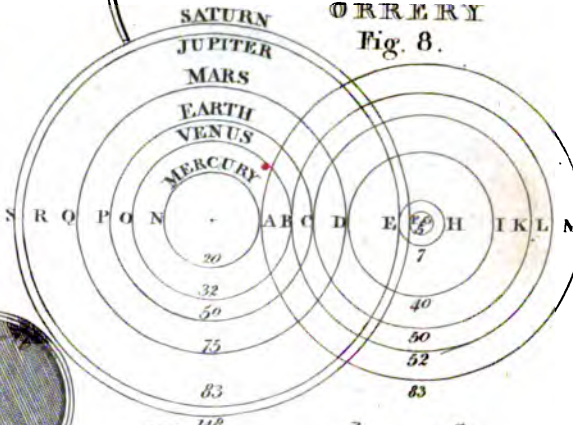


Fig. 6.

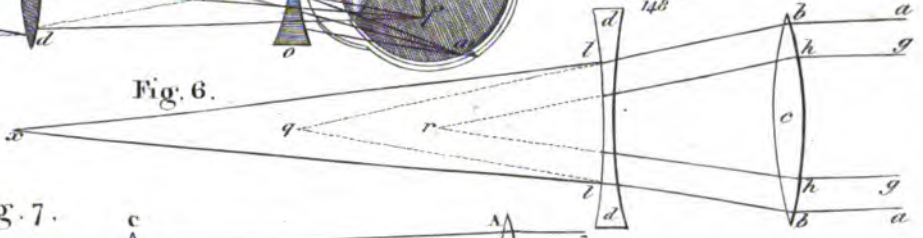
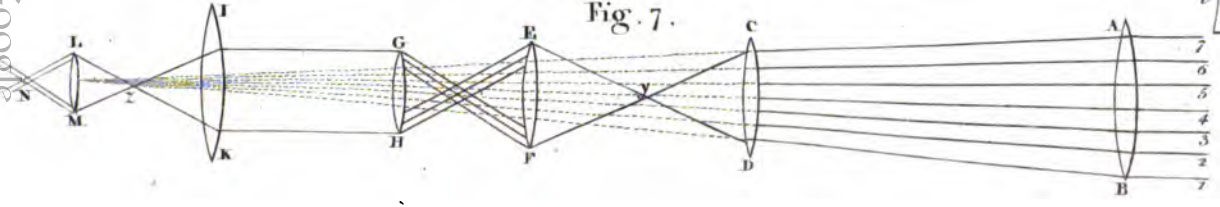


Fig. 7.



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By the middle one GK the pencils of rays coming from the object-glass are refracted so as to tend to a focus at O; but being intercepted by the proper eye-glass DF, they are brought together at I, which is nearer to that lens than its proper focus at L; so that the angle DIF, under which the object now appears, is larger than DLF, under which it would have appeared without this additional glass: and consequently the object is more magnified in the same proportion. Dr HOOKE tells us, that, in most of his observations, he made use of a double microscope, with this broad middle glass, when he wanted to see much of an object at one view, taking it out when he would examine the small parts of an object more accurately; for the fewer refractions there are, the more bright and clear the object appears.

568. Having given a practical account of the construction of Dr SMITH's double reflecting microscope in § 210, it is proper in this place to ascertain its magnifying power. This we shall do from the author himself, because his symbols, being general, are applicable to such microscopes of all dimensions; and though the mere practical reader may perhaps be at first sight puzzled by them, yet, if he will substitute any particular numbers for *m* and *n*, &c. he may ascertain with ease the magnifying power of such a microscope of those particular dimensions.

569. Between the centre E and principal focus T of a concave speculum ABC, (*fig.* 2. *Plate* CCLX.) whose axis is EQTC, place an object PQ; (*fig.* 7. *Plate* CCLIX.) and let the rays flowing from it be reflected from the speculum AB towards an image *pq*; (*fig.* 2. *Plate* CCLX.); but before they unite in it, let them be received by a convex speculum *abc*, and thence be reflected, through a hole BC in the vertex of the concave, to a 2d image ϖx, to be viewed through an eye-glass *l*. The object may be situated between the specula C, *c*; or, which is better, between the principal focus *t* and vertex *c* of the convex one, a small hole being made in its vertex for the incident rays to pass through. In both cases we have TQ, TE, T*q*, continual proportionals in some given ratio, suppose of 1 to *n*; and also *tq*, *tc*, *tx*, continual proportionals in some other given ratio, suppose of 1 to *m*. Then if *d* be the usual distance at which we view minute objects distinctly with the naked eye, and $\varkappa l$ the focal distance of the least eye-glass, through which the object appears sufficiently bright and distinct, it will be magnified in the ratio of *mnd* to $\varkappa l$. For the object PQ, and its first image *pq*, are terminated on one side by the common axis of the specula, and on the other by a line PE*p*, drawn through the centre E of the concave ABC. Likewise the images *pq* and ϖx are terminated by the common axis and by the line $ep\varpi$, drawn through the centre *e* of the convex *abc* (*Euclid.* v. 12.). Hence, by the similar triangles ϖxe, *pqe*, and also *pq* E, PQE, we have $\varpi x : pq :: xe : qe :: m : 1$, and $pq : PQ :: qE : QE :: n : 1$; and consequently $\varpi x : PQ :: mn : 1$, whence $\varpi x = mn \times PQ$. Now if lx be the focal distance of the eye-glass *l*, the points P, Q, of the object, are seen through it by the rays of two pencils emerging parallel to the lines ϖl, xl respectively; that is, PQ appears under an angle equal to ϖlx, which is as $\frac{\varpi x}{xl} = \frac{mnPQ}{xl}$; and to the naked eye at the distance *d* from PQ, it appears under an angle PoQ which is as $\frac{PQ}{d}$, and therefore is magnified in the ratio of these angles, that is, of *mnd* to $\varkappa l$.

569. *Corol.* Having the numbers *m*, *n*, *d*, to find an eye-glass which shall cause the microscope to magnify M times in diameter, take $\varkappa l = \frac{mnd}{M}$. For the apparent magnitude is to the true as $M : 1 :: mnd : \varkappa l$.

570. We shall conclude with the following easy method of ascertaining the magnifying power of such microscopes as are most in use. The apparent magnitude of any object is measured by the angle under which it is seen; and this angle is greater or smaller according as the object is near to or far from the eye; and of consequence the less the distance at which it can be viewed the larger it will appear. The naked eye is unable to distinguish any object brought exceedingly near it: but looking through a convex lens, however near the focus of that lens be, there an object may be distinctly seen; and the smaller the lens is, the nearer will be its focus, and in the same proportion the greater will be its magnifying power. From these principles, it is easy to find the reason why the first or greatest magnifiers are so extremely minute; and also to calculate the magnifying power of any convex lens employed in a single microscope: For as the proportion of the natural sight is to the focus, such will be its power of magnifying. If the focus of a convex lens, for instance, be at one inch, and the natural sight at 8 inches, which is the common standard, an object may be seen through that lens at one inch distance from the eye, and will appear in its diameter 8 times larger than it does to the naked eye: but as the object is magnified every way, in length as well as in breadth, we must square this diameter to know how much it really is enlarged; and we then find that its superficies is magnified 64 times.

571. Again, suppose a convex lens whose focus is only one tenth of an inch distant from its centre; as in 8 inches, the common distance of distinct vision with the naked eye, there are 80 such tenths, an object may be seen through this glass 80 times nearer than with the naked eye. It will, of consequence, appear 80 times longer, and as much broader, than it does to common sight; and therefore is 6400 times magnified. If a convex glass be so small that its focus is only $\frac{1}{160}$ of an inch distant, we find that 8 inches contains 160 of these 20th parts; and of consequence the length and breadth of any object seen through such a lens will be magnified 160 times, and the whole surface 25,600 times. As it is an easy matter to melt a drop or globule of a much smaller diameter than a lens can be ground, and as the focus of a globule is no farther off than a quarter of its own diameter, it must of consequence magnify to a prodigious degree. But this excessive magnifying power is much more than counterbalanced by its admitting so little

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light, want of distinctness, and showing such a minute part of the objects to be examined; for which reason, these globules, though greatly in vogue some time ago, are now almost entirely rejected. Mr LEEUWENHOEK made use only of single microscopes consisting of convex lenses, and left to the Royal Society a legacy of 26 of those glasses. According to Mr FOLKES's description of these, they were all exceedingly clear, and showed the object very bright and distinct; "which (says he) must be owing to the great care this gentleman took in the choice of his glass, his exactness in giving it the true figure, and afterwards, among many, reserving only such for his use as upon trial he found to be most excellent. Their powers of magnifying are different, as different objects may require: and as, on the one hand, being all ground glasses, none of them are so small, or consequently magnify to so great a degree, as some of those drops frequently used in other microscopes; yet, on the other hand, the distinctness of these very much exceeds what I have met with in glasses of that sort. And this was what Mr Leeuwenhoek ever proposed; rejecting all those degrees of magnifying, in which he could not so well obtain that end. For he informs us in one of his letters, that though he had above 40 years by him glasses of an extraordinary smallness, he had made but very little use of them; as having found in a long course of experience, that the most considerable discoveries were to be made with such glasses as, magnifying but moderately, exhibited the object with the greatest brightness and distinctness."

572. In a single microscope, to learn the magnifying power of any glass, no more is necessary than to bring it to its true focus, the exact place whereof will be known by an object appearing perfectly distinct and sharp when placed there. Then, with a pair of small compasses, measure, as nearly as possible, the distance from the centre of the glass to the object, and afterwards applying the compasses to any ruler, with a diagonal scale of the parts of an inch marked on it, you will easily find how many parts of an inch the said distance is. When that is known, compute how many times those parts of an inch are contained in 8 inches, and that will give the number of times the diameter is magnified; squaring the diameter will give the superficies; and the solid contents will be shown by multiplying the superficies by the diameter.

573. The superficies of one side of an object only can be seen at one view; and to compute how much that is magnified, is most commonly sufficient: but sometimes it is satisfactory to know how many minute objects are contained in a larger; as suppose we desire to know how many animalcules are contained in the bulk of a grain of sand: and to answer this, the cube, as well as the surface, must be taken into the account. For the satisfaction of those who are not much versed in these matters, we subjoin the following

574. TABLE of the MAGNIFYING POWERS of CONVEX GLASSES, employed in *Single Microscopes*, according to the distance of their focus; calculated by the scale of an inch divided into 100 parts: showing how many times the DIAMETER, the SUPERFICIES, and the CUBE of an OBJECT, is magnified, when viewed through such glasses, to an eye whose natural sight is at eight inches, or 800 of the 100th parts of an inch.

The focus of a glass at	Hundredth parts of an inch.	Magnifies the Diameter;	the Superficies.	the Cube of an Object.
$\frac{1}{4}$, or 50	16	16	256	4,096
$\frac{1}{5}$, or 40	20	20	400	8,000
$\frac{1}{7\frac{1}{2}}$, or 30	26	26	676	17,576
$\frac{1}{8}$, or 29	40	40	1,600	64,000
15	53	53	2,809	148,877
14	57	57	3,249	185,193
13	61	61	3,721	226,981
12	66	66	4,356	287,496
11	72	72	5,184	373,248
$\frac{1}{12}$, or 10	80	80	6,400	512,000
9	88	88	7,744	681,472
8	100	100	10,000	1,000,000
7	114	114	12,996	1,481,544
6	133	133	17,689	2,352,637
$\frac{1}{20}$, or 5	160	160	25,600	4,096,000
4	200	200	40,000	8,000,000
3	266	266	70,756	18,821,096
$\frac{1}{30}$, or 2	400	400	160,000	64,000,000
1	800	800	640,000	512,000,000

Times.

575. The greatest magnifier in Mr Leeuwenhoek's cabinet of microscopes, presented to the Royal Society, has its focus, as nearly as can well be measured, at one 20th of an inch distance from its centre; and consequently magnifies the diameter of an object 160 times, and the superficies 25,600. But the greatest magnifier in Mr WILSON's single microscopes, as they are now made, has usually its focus at no farther distance than about the 50th part of an inch; whereby it has a power of enlarging the diameter of an object 400, and its superficies 160,000 times.

576. The magnifying power of the solar microscope must be calculated in a different manner; for here the difference between the focus of the magnifier and the distance of the screen or sheet whereon the image of the object is cast, is the proportion of its being magnified. Suppose the lens made use of has its focus at half an inch, and the screen is placed at the distance of five feet, the object will then appear magnified in the proportion of five feet to half an inch: and as in five feet there are 120 half inches, the diameter will be magnified 120 times, and the superficies 14,400 times; and, by putting the screen at farther distances, you may magnify the object almost as much as you please; but Mr Baker advises to regard distinctness more than bigness, and to place the screen just at that distance where the object is seen most distinct and clear.

577. With regard to the double reflecting microscope, Mr BAKER observes, that the power of the object lens is indeed greatly increased by the addition of two eye-glasses; but as no object lens can be used with them of so minute a diameter, or which magnifies of itself near so much as those that can be used alone, the glasses of this microscope, upon the whole, magnify little or nothing more than those of Mr Wilson's single one; the chief advantage arising from a combination of lenses

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lenſes being the ſight of a larger field or portion of an object magnified in the ſame degree.

§ IV. *Of* TELESCOPES.

578. I. The REFRACTING TELESCOPE. After what has been ſaid concerning the ſtructure of the compound microſcope, and the manner in which the rays paſs through it to the eye, the nature of the common aſtronomical teleſcope will eaſily be underſtood: for it differs from the microſcope only in that the object is placed at ſo great a diſtance from it, that the rays of the ſame pencil, flowing from thence, may be conſidered as falling parallel to one another upon the object-glaſs; and therefore the image made by that glaſs is looked upon as coincident with its focus of parallel rays.

579. This will appear very plain from *fig.* 3. *pl.* CCLX, in which AB is the object emitting the ſeveral pencils of rays A *c d*, B *c d*, &c. but ſuppoſed to be at ſo great a diſtance from the object-glaſs *c d*, that the rays of the ſame pencil may be conſidered as parallel to each other; they are therefore ſuppoſed to be collected into their reſpective foci at the points *m* and *p*, ſituated at the focal diſtance of the object-glaſs *c d*. Here they form an image E, and croſſing each other proceed diverging to the eye-glaſs *h g*; which being placed at its own focal diſtance from the points *m* and *p*, the rays of each pencil, after paſſing through that glaſs, will become parallel among themſelves; but the pencils themſelves will converge conſiderably with reſpect to one another, even ſo as to croſs at *e*, very little farther from the glaſs *g h* than its focus; becauſe, when they entered the glaſs, their axes were almoſt parallel, as coming through the object-glaſs at the point *k*, to whoſe diſtance the breadth of the eye-glaſs in a long teleſcope bears very ſmall proportion. So that the place of the eye will be nearly at the focal diſtance of the eye-glaſs, and the rays of each reſpective pencil being parallel among themſelves, and their axes croſſing each other in a larger angle than they would do if the object were to be ſeen by the naked eye, viſion will be diſtinct, and the object will appear magnified. The power of magnifying in this teleſcope is as the focal length of the object-glaſs to the focal length of the eye-glaſs.

580. DEM. To prove this, we may conſider the angle A*k*B as that under which the object would be ſeen by the naked eye; for in conſidering the diſtance of the object, the length of the teleſcope may be omitted, as bearing no proportion to it. Now the angle under which the object is ſeen by means of the teleſcope is *g e h*, which is to the other A*k*B, or its equal *g k h*, as the diſtance from the centre of the object-glaſs to that of the eye-glaſs. The angle, therefore, under which an object appears to an eye aſſiſted by a teleſcope of this kind, is to that under which it would be ſeen without it, as the focal length of the object-glaſs to the focal length of the eye-glaſs. It is evident from the figure, that the viſible area, or ſpace which can be ſeen at one view when we look through this teleſcope, depends on the breadth of the eye-glaſs, and not of the object-glaſs; for if the eye-glaſs be too ſmall to receive the rays *g m*, *p h*, the extremities of the object could not have been ſeen at all: a larger breadth of the object-glaſs conduces only to the rendering each point of the image more luminous, by receiving a larger pencil of rays from each point of the object.

581. It is in this teleſcope as in the compound microſcope, where we ſee, when we look through it, not the object itſelf, but only an image of it at CED: now that image being inverted with reſpect to the object, as it is, becauſe the axis of the pencils that flow from the object croſs each other at *k*, objects ſeen through a teleſcope of this kind neceſſarily appear inverted. This is a circumſtance not at all regarded by aſtronomers; but for viewing objects upon the earth, it is convenient that the teleſcope ſhould repreſent them in their natural poſture; to which uſe the teleſcope with three eye-glaſſes, as repreſented *fig.* 4. *pl.* CCLX. is peculiarly adapted, and the progreſs of the rays through it from the object to the eye is as follows: AB is the object ſending out the ſeveral pencils A *c d*, B *c d*, &c. which paſſing through the object-glaſs *c d*, are collected into their reſpective foci in CD, where they form an inverted image. From hence they proceed to the firſt eye-glaſs *e f*, whoſe focus being at *l*, the rays of each pencil are rendered parallel among themſelves, and their axes, which were nearly parallel before, are made to converge and croſs each other: the ſecond eye-glaſs *g h*, being ſo placed that its focus ſhall fall upon *m*, renders the axes of the pencils which diverge from thence parallel, and cauſes the rays of each, which were parallel among themſelves, to meet again at its focus EF on the other ſide, where they form a ſecond image inverted with reſpect to the former, but erect with reſpect to the object. Now this image being ſeen by the eye at *a b* through the eye-glaſs *i k*, affords a direct repreſentation of the object, and under the ſame angle that the firſt image CD would have appeared, had the eye been placed at *l*, ſuppoſing the eye-glaſſes to be of equal convexity; and therefore the object is ſeen equally magnified in this as in the former teleſcope, that is, as the focal diſtance of the object-glaſs to that of any one of the eye-glaſſes, and appears erect.

582. If a teleſcope exceeds 20 feet, it is of no uſe in viewing objects upon the ſurface of the earth; for if it magnifies above 90 or 100 times, as thoſe of that length uſually do, the vapours which continually float near the earth in great plenty, will be ſo magnified as to render viſion obſcure.

583. *The* GALILEAN TELESCOPE with the concave eye-glaſs is conſtructed as follows: AB (*fig.* 5. *pl.* CCLX.) is an object ſending forth the pencils of rays *g b i*, *k l m*, &c. which, after paſſing through the object-glaſs *c d*, tend towards *e E f* (where we will ſuppoſe the focus of it to be), in order to form an inverted image there as before; but in their way to it are made to paſs through the concave glaſs *n o*, ſo placed that its focus may fall upon E, and conſequently the rays of the ſeveral pencils which were converging towards thoſe reſpective focal points *e*, E, *f*, will be rendered parallel among themſelves: but the axes of thoſe pencils croſſing each other at F, and diverging from thence, will be rendered more diverging, as repreſented in the figure. Now theſe rays entering the pupil of an eye, will form a large and diſtinct image *a b* upon the retina, which will be inverted with

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with reſpect to the object, becauſe the axis of the pencils croſs in F. The object of courſe will be ſeen erect, and the angle under which it will appear will be equal to that which the lines *a*F, *b*F, produced back through the eye-glaſs, form at F.

584. It is evident, that the leſs the pupil of the eye is, the leſs is the viſible area ſeen through a teleſcope of this kind; for a leſs pupil would exclude ſuch pencils as proceed from the extremities of the object AB, as is evident from the figure. This is an inconvenience that renders this teleſcope unfit for many uſes; and is only to be remedied by the teleſcope with the convex eye-glaſſes, where the rays which form the extreme parts of the image are brought together in order to enter the pupil of the eye, as explained above. It is apparent alſo, that the nearer the eye is placed to the eye-glaſs of this teleſcope, the larger is the area ſeen through it; for, being placed cloſe to the glaſs, as in the figure, it admits rays that come from A and B, the extremities of the object, which it could not if it was placed farther off. The degree of magnifying in this teleſcope is in the ſame proportion with that in the other, *viz.* as the focal diſtance of the object-glaſs is to the focal diſtance of the eye-glaſs. For there is no other difference but this, *viz.* that as the extreme pencils in that teleſcope were made to converge and form the angle *g e h* (*fig.* 3. *Pl.* CCLX.) or *ink* (*fig.* 4.), theſe are now made to diverge and form the angle *a* F *b* (*fig.* 5.) which angles, if the concave glaſs in one has an equal refractive power with the convex one in the other, will be equal, and therefore each kind will exhibit the object magnified in the ſame degree.

585. There is a defect in all theſe kinds of teleſcopes, not to be remedied in a ſingle lens by any means whatever, which was thought only to ariſe from hence, *viz.* that ſpherical glaſſes do not collect rays to one and the ſame point. But it was happily diſcovered by Sir Iſaac Newton, that the imperfection of this ſort of teleſcope, ſo far as it ariſes from the ſpherical form of the glaſſes, bears almoſt no proportion to that which is owing to the different refrangibility of light. This diverſity in the refraction of rays is about a 28th part of the whole; ſo that the object-glaſs of a teleſcope cannot collect the rays, which flow from any one point in the object into a leſs room than the circular ſpace, whoſe diameter is about the 56th part of the breadth of the glaſs. To ſhow this, let AB (*fig.* 15. *pl.* CCLVIII.) repreſent a convex lens, and let CDF be a pencil of rays flowing from the point D; let H be the point at which the leaſt refrangible rays are collected to a focus; and I, that where the moſt refrangible concur. Then, if IH be the 28th part of EH, IK will be a proportionable part of EC (the triangles HIK and HEC being ſimilar): conſequently LK will be the 28th part of FC. But MN will be the leaſt ſpace into which the rays will be collected, as appears by their progreſs repreſented in the figure. Now MN is but about half of KL; and therefore it is about the 56th part of CF: ſo that the diameter of the ſpace into which the rays are collected will be about the 56th part of the breadth of that part of the glaſs through which the rays paſs; which was to be ſhown. Since therefore each point of the object will be repreſented in ſo large a ſpace, and the centres of thoſe ſpaces will be contiguous, becauſe the points in the object the rays flow from are ſo; it is evident, that the image of an object made by ſuch a glaſs muſt be a moſt confuſed repreſentation, though it does not appear ſo when viewed through an eye-glaſs that magnifies in a moderate degree; conſequently the degree of magnifying in the eye-glaſs muſt not be too great with reſpect to that of the object-glaſs, leſt the confuſion become ſenſible.

586. Notwithſtanding this imperfection, a dioptrical teleſcope may be made to magnify in any given degree, provided it be of ſufficient length; for the greater the focal diſtance of the object-glaſs is, the leſs may be the proportion which the focal diſtance of the eye-glaſs may bear to that of the object-glaſs, without rendering the image obſcure. Thus, an object-glaſs, whoſe focal diſtance is about 4 feet, will admit of an eye-glaſs whoſe focal diſtance ſhall be little more than an inch, and conſequently will magnify almoſt 48 times; but an object-glaſs of 40 feet focus, will admit of an eye-glaſs of only 4 inches focus, and will therefore magnify 120 times; and an object-glaſs of 100 feet focus will admit of an eye-glaſs of little more than ſix inches focus, and will therefore magnify almoſt 200 times.

587. The reaſon of this diſproportion in their ſeveral degrees of magnifying is thus explained: Since the diameter of the ſpaces, into which rays flowing from the ſeveral points of an object are collected, are as the breadth of the object-glaſs, it is evident that the degree of confuſedneſs in the image is as the breadth of that glaſs; for the degree of confuſedneſs will only be as the diameters or breadths of thoſe ſpaces, and not as the ſpaces themſelves. Now the focal length of the eye-glaſs, that is, its power of magnifying, muſt be as that degree; for, if it exceeds it, it will render the confuſedneſs ſenſible; and therefore it muſt be as the breadth or diameter of the object-glaſs. The diameter of the object-glaſs, which is as the ſquare root of its aperture or magnitude, muſt be as the ſquare root of the power of magnifying in the teleſcope; for unleſs the aperture itſelf be as the power of magnifying, the image will want light: the ſquare root of the power of magnifying will be as the ſquare root of the focal diſtance of the object-glaſs; and therefore the focal diſtance of the eye-glaſs muſt be only as the ſquare root of that of the object-glaſs. So that in making uſe of an object-glaſs of a longer focus, ſuppoſe, than one that is given, you are not obliged to apply an eye-glaſs of a proportionably longer focus than what would ſuit the given object-glaſs, but ſuch an one only whoſe focal diſtance ſhall be to the focal diſtance of that which will ſuit the given object-glaſs, as the ſquare root of the focal length of the object-glaſs, you make uſe of, is to the ſquare root of the focal length of the given one. And this is the reaſon, that longer teleſcopes are capable of magnifying in a greater degree than ſhorter ones, without rendering the object confuſed or coloured.

588. But the inconveniency of very long teleſcopes is ſo great, that different attempts have been made to remove it. Of theſe, the moſt ſucceſsful

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Fig. 1.

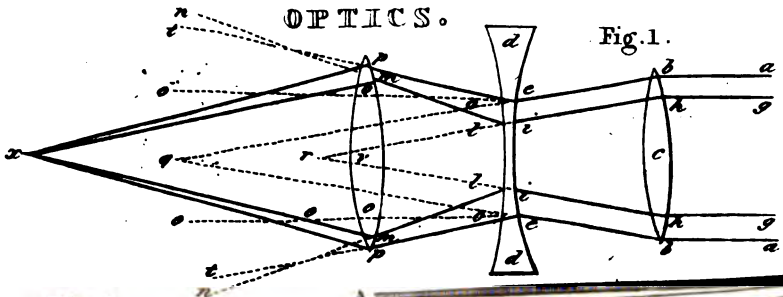


Fig. 2.

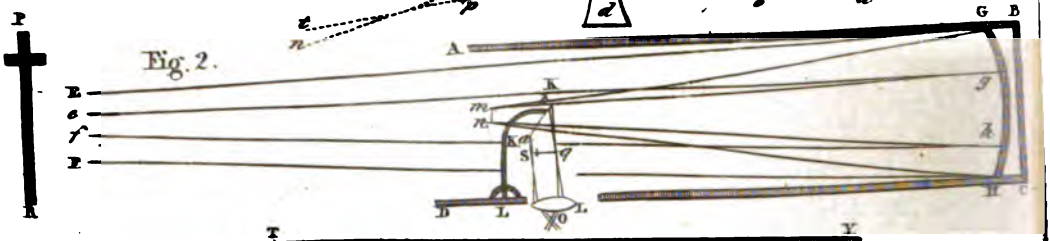


Fig. 3.

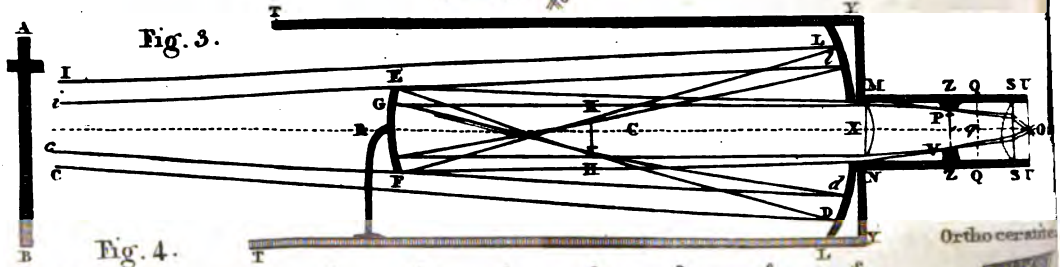
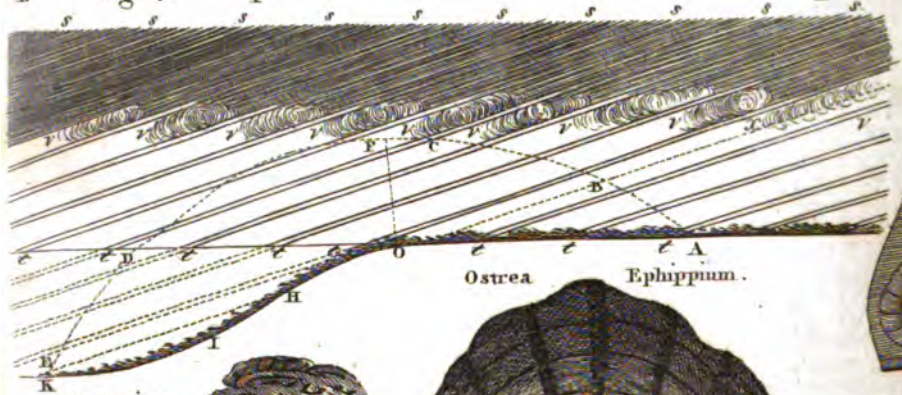


Fig. 4.



Ostrea

Ephippium.

Ortho ceratite

Osuracites.

Papilio N°. 3.

Otis Tarda.

T. Clerk Sculp.

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cefsful have been by DOLLOND and BLAIR; and the general principles upon which thefe eminent opticians proceeded have been mentioned above. (See § 31, 35—40, 55, 56, 196.) The object-glaffes of M. Dollond's telefcopes are compofed of 3 diftinct lenfes, two convex, and one concave; of which the concave one is placed in the middle, as is repreſented in *fig.* 16. *pl.* CCLVIII. where *a* and *c* fhow the two convex lenfes, and *bb* the concave one, which is by the Britifh artifts placed in the middle. The two convex ones are made of London crown glafs, and the middle one of white flint glafs; and they are all ground to fpheres of different radii, according to the refractive powers of the different kinds of glafs and the intended focal diftance of the object-glafs of the telefcope. According to Boſcovich, the focal diſtance of the parallel rays for the concave lens is one half, and for the convex glafs one third of the combined focus. When put together, they refract the rays in the following manner. Let *a b*, *a b* (*fig.* 1. *pl.* CCLXI.) be two red rays of the fun's light falling parallel on the firſt convex lens *c*. Suppofing there was no other lens preſent but that one, they would then be converged into the lines *be*, *be*, and at laſt meet in the focus *q*. Let the lines *g b*, *g b*, repreſent two violet rays falling on the furface of the lens. Theſe are alſo refracted, and will meet in a focus; but as they have a greater degree of refrangibility than the red rays, they muſt of conſequence converge more by the ſame power of refraction in the glaſs, and meet ſooner in a focus, ſuppoſe at *r*.—Let now the concave lens *d d* be placed in ſuch a manner as to intercept all the rays before they come to their focus. Were this lens made of the ſame materials, and ground to the ſame radius with the convex one, it would have the ſame power to cauſe the rays diverge, that the former had to make them converge. In this caſe, the red rays would become parallel, and move on in the line *o o*, *o o*: But the concave lens, being made of flint glaſs, and upon a ſhorter radius, has a greater refractive power, and therefore they diverge a little after they come out of it; and if no 3d lens was interpoſed, they would proceed diverging in the lines *o p t*, *o p t*; but, by the interpoſition of the 3d lens *e v o*, they are again made to converge, and meet in a focus ſomewhat more diſtant than the former, as at *x*. By the concave lens, the violet rays are alſo refracted, and made to diverge: but having a greater degree of refrangibility, the ſame power of refraction makes them diverge ſomewhat more than the red ones; and thus, if no 3d lens was interpoſed, they would proceed in ſuch lines as *l m n*, *l m n*. Now, as the differently coloured rays fall upon the 3d lens with different degrees of divergence, it is plain, that the ſame power of refraction in that lens will operate upon them, in ſuch a manner as to bring them all together to a focus very nearly at the ſame point. The red rays, it is true, require the greateſt power of refraction to bring them to a focus; but they fall upon the lens with the leaſt degree of divergence. The violet rays, though they require the leaſt power of refraction, yet have the greateſt degree of divergence; and thus all meet together at the point *x*, or very nearly ſo.

589. But, though we have hitherto ſuppoſed the refraction of the concave lens to be greater than that of the convex one, it is eaſy to ſee how the errors occaſioned by the firſt lens may be corrected by it, though it ſhould have even a leſs power of refraction than the convex one. Thus, let *a b*, *a b*, (*fig.* 6. *pl.* CCLX.) be two rays of red light falling upon the convex lens *c*, and refracted into the focus *q*; let alſo *g b*, *g h*, be two violet rays converging into a focus at *r*; it is not neceſſary, in order to their convergence into a common focus at *x*, that the concave lens ſhould make them *diverge*: it is ſufficient if the glaſs has a power of diſperſing the violet rays ſomewhat more than the red ones; and many kinds of glaſs have this power of diſperſing ſome kinds of rays, without a very great power of refraction. It is better, however, to have the object-glaſs compoſed of 3 lenſes; becauſe there is then another correction of the abberration by means of the 3d lens; and it might be impoſſible to find two lenſes, the errors of which would exactly correct each other. The effect may be the ſame, whether the concave glaſs is a portion of the ſame ſphere with the others or not; the effect depending upon a combination of certain circumſtances, of which there is an infinite variety.

590. By this correction of the errors ariſing from the different refrangibility of the rays of light, it is poſſible to ſhorten dioptric teleſcopes conſiderably, and yet leave them equal magnifying powers. The reaſon is, that the errors ariſing from the object-glaſs being removed, thoſe which are occaſioned by the eye-glaſs are inconſiderable: for the error is always in proportion to the length of the focus in any glaſs; and in very long teleſcopes it becomes exceedingly great, being no leſs than $\frac{1}{18}$th of the whole; but in glaſſes of a few inches focus, it becomes trifling. Dollond's refracting teleſcopes are therefore now conſtructed in the following manner. Let AB (*fig.* 7. *pl.* CCLX.) repreſent an object-glaſs compoſed of three lenſes, as above deſcribed, and converging the rays 1, 2, 3, 4, &c. to a very diſtant focus as at *x*. By means of the interpoſed lens CD, however, they are converged to one much nearer, as at *y*, where an image of the object is formed. The rays diverging thence fall upon another lens EF, where the pencils are rendered parallel, and an eye placed near that lens would ſee that object magnified and very diſtinct. To enlarge the magnifying power ſtill more, however, the pencils thus become parallel are made to fall upon another at GH; by which they are again made to converge to a diſtant focus: but, being intercepted by the lens IK, they are made to meet at the nearer one *z*; whence diverging to LM, they are again rendered parallel, and the eye at N ſees the object very diſtinctly.

591. From an inſpection of the figure it is evident, that Dollond's teleſcope thus conſtructed is in fact two teleſcopes combined together; the firſt ending with the lens EF, and the 2d with LM. In the firſt we do not perceive the object itſelf, but the image of it formed at *y*; and in the

2d

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ad we perceive only the image of that image formed at *s*. Nevertheleſs, ſuch teleſcopes are exceedingly diſtinct, and repreſent objects ſo clearly as to be preferred, in viewing terreſtrial things, even to reflectors themſelves. The latter indeed have greatly the advantage in their powers of magnifying, but they are very deficient in point of light. Much more light is loſt by reflection than by refraction: and as in theſe teleſcopes the light muſt unavoidably ſuffer two reflections, a great deal of it is loſt; nor is this loſs counterbalanced by the greater aperture which theſe teleſcopes will bear, which enables them to receive a greater quantity of light than the refracting ones. The metals of reflecting teleſcopes alſo are very much ſubject to tarniſh, and require much more dexterity to clean them than the glaſſes of refractors; which makes them more troubleſome and expenſive, though for making diſcoveries in the celeſtial regions they are undoubtedly the only proper inſtruments which have been hitherto conſtructed. If Dr Blair indeed ſhall diſcover a vitreous ſubſtance of the ſame powers with the fluid in the compound object-glaſs of his teleſcope, (and from his abilities and perſeverance we have every thing to hope,) a refracting teleſcope may be conſtructed ſuperior for every purpoſe to the beſt reflector.

592. II. The Reflecting Teleſcope. The inconveniencies ariſing from the great length of refracting teleſcopes, before Dollond's diſcovery, are obvious; and theſe, together with the difficulties occaſioned by the different refrangibility of light, induced Sir Iſaac Newton to turn his attention to the ſubject of reflection, and endeavour to realize the ideas of himſelf and others, concerning the poſſibility of conſtructing teleſcopes upon that principle.—The inſtrument which he contrived is repreſented, (*fig.* 2. *pl.* 261.) where ABCD is a large tube, open at AD and cloſed at BC, and of a length at leaſt equal to the diſtance of the focus from the metallic ſpherical concave ſpeculum GH placed at the end BC. The rays EG, FH, &c. proceeding from a remote object PR, interſect one another ſomewhere before they enter the tube, ſo that EG, *e g*, are thoſe that come from the lower part of the object, and *f h*, FH from its upper part; theſe rays, after falling on the ſpeculum GH, will be reflected, ſo as to converge and meet in *m n*, where they will form a perfect image of the object.—But as this image cannot be ſeen by the ſpectator, they are intercepted by a ſmall plane metallic ſpeculum KK, interſecting the axis at an angle of 45°, by which the rays tending to *m n* will be reflected towards a hole LL in the ſide of the tube, and the image of the object will thus be formed in *q* 8; which image will be leſs diſtinct, becauſe ſome of the rays which would otherwiſe fall on the concave ſpeculum GH, are intercepted by the plane ſpeculum: nevertheleſs it will appear in a conſiderable degree diſtinct, becauſe the aperture AD of the tube, and the ſpeculum GH are large. In the lateral hole LL is fixed a convex lens, whoſe focus is at S *q*; and therefore this lens will refract the rays that proceed from any point of the image, ſo as at their exit they will be parallel, and thoſe that proceed from the extreme points S *q* will converge after refraction, and form an angle at O, where the eye is placed; which will ſee the image S *q*, as if it were an object, through the lens LL; conſequently the object will appear enlarged, inverted, bright, and diſtinct. In LL lenſes of different convexities may be placed, which by being moved nearer to the image, or farther from it, would repreſent the object more or leſs magnified, provided that the ſurface of the ſpeculum GH be of a perfectly ſpherical figure. If, in the room of one lens LL, 3 lenſes be diſpoſed in the ſame manner with the three eye-glaſſes of the refracting teleſcope, the object will appear erect, but leſs diſtinct than when it is obſerved with one lens. On account of the poſition of the eye in this teleſcope, it is extremely difficult to direct the inſtrument towards any object. Huygens, therefore, firſt thought of adding to it a ſmall refracting teleſcope, the axis of which is parallel to that of the reflector. This is called a *finder*, or *director*. The Newtonian teleſcope is alſo furniſhed with a ſuitable apparatus for the commodious uſe of it.

593. To determine the magnifying power of this teleſcope, it is to be conſidered that the plane ſpeculum KK is of no uſe in this reſpect. Let us then ſuppoſe, that one ray proceeding from the object coincides with the axis GLIA (*fig.* 8. *Pl.* 259.) of the lens and ſpeculum; let *b b* be another ray proceeding from the lower extreme of the object, and paſſing through the focus I of the ſpeculum KH: this will be reflected in the direction *b i d*, parallel to the axis GLA, and falling on the lens *d* L *d*, will be refracted to G; ſo that GL will be equal to LI, and *d* G = *d* I. To the naked eye the object would appear under the angle I *b i* = *b* IA; but by means of the teleſcope it appears under the angle *d* G L = *d* I L = I *d i*; and the angle I *d i* is to the angle I *b i* :: *b* I : I *d*; conſequently the apparent magnitude by the teleſcope is to that by the naked eye, as the diſtance of the focus of the ſpeculum from the ſpeculum, to the diſtance of the focus of the lens from the lens.

594. The Newtonian teleſcope was ſtill inconvenient. Notwithſtanding the contrivance of Huygens, objects were by it found with difficulty. The Gregorian teleſcope, therefore, ſoon obtained the preference, to which for moſt purpoſes it is juſtly entitled, as is evident from the following conſtruction: Let TYYT (*fig.* 3. *Pl.* 261.) be a braſs tube, in which L*l*D is a metallic concave ſpeculum, perforated in the middle at X; and EF a leſs concave mirror, ſo fixed by the arm or ſtrong wire RT, which is moveable by means of a ſcrew on the outſide of the tube, as to be moved nearer to, or farther from, the larger ſpeculum L*l*D, its axis being kept in the ſame line with that of the great one. Let AB repreſent a very remote object, from each part of which iſſue pencils of rays, ſuch as *e d*, C D, from A the upper extreme of the object, and I L, *i l*, from the lower part B; the rays I L, C D from the extremes croſſing one another before they enter the tube. Theſe rays, falling upon the larger mirror LD, are reflected from it into the focus KH, where they form an inverted image of the object AB, as in the Newtonian teleſcope. From this image the rays, iſſuing as from an object, fall upon

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upon the ſmall mirror EF, the centre of which is at c; ſo that after reflection they would meet in their foci at QQ, and there form an erect image. But ſince an eye at that place could ſee but a ſmall part of an object, in order to bring rays from more diſtant parts of it into the pupil, they are intercepted by the plano-convex lens MN, by which means a ſmaller erect image is formed at PV, which is viewed through the meniſcus SS by an eye at O. This meniſcus both makes the rays of each pencil parallel, and magnifies the image PV. At this place of the image all the foreign rays are intercepted by the perforated partition ZZ. For the ſame reaſon the hole near the eye O is very narrow. When nearer objects are viewed by this teleſcope, the ſmall ſpeculum EF is removed to a greater diſtance from the larger LD, ſo that the 2d image may be always formed in PV; and this diſtance is to be adjuſted (by the ſcrew on the outſide of the great tube) according to the form of the eye of the ſpectator. It is alſo neceſſary, that the axis of the teleſcope ſhould paſs through the middle of the ſpeculum LL, and the middle of the hole X, the centres of the lenſes MN, SS, and the hole near O. As the hole X in the ſpeculum LL can reflect none of the rays iſſuing from the object, that part of the image which correſponds to the middle of the object muſt appear to the obſerver more dark and confuſed than the extreme parts of it. Beſides, the ſpeculum EF will alſo intercept many rays proceeding from the object; and therefore, unleſs the aperture TT be large, the object muſt appear in ſome degree obſcure.

595. In the beſt reflecting teleſcopes, the focus of the ſmall mirror is never coincident with the focus of the great one, where the firſt image KH is formed, but a little beyond it (with reſpect to the eye), as at n; the conſequence of which is, that the rays of the pencils will not be parallel after reflection from the ſmall mirror, but converge ſo as to meet in points about QQ, where they would form a larger upright image than PV, if the glaſs R was not in their way; and this image might be viewed by a ſingle eye-glaſs properly placed between the image and the eye; but then the field of view would be leſs, and conſequently not ſo pleaſant; for which reaſon, the glaſs R is ſtill retained, to enlarge the ſcope or area of the field. To find the magnifying power of this teleſcope, multiply the focal diſtance of the great mirror by the diſtance of the ſmall mirror from the image next the eye, and multiply the focal diſtance of the ſmall mirror by the focal diſtance of the eye-glaſs: then divide the product of the former multiplication by the product of the latter, and the quotient will expreſs the magnifying power.

596. One great advantage of the reflecting teleſcope is, that it will admit of an eye-glaſs of a much ſhorter focal diſtance than a refracting teleſcope will; and conſequently it will magnify ſo much the more; for the rays are not coloured by reflection from a concave mirror, if it be ground to a true figure, as they are by paſſing through a convex gl.., let it be ground ever ſo true. The nearer an object is to the teleſcope, the more its pencils of rays will diverge before they fall upon the great mirror, and therefore they will be the longer of meeting in points after reflection; ſo that the firſt image KH will be formed at a greater diſtance from the large mirror, when the object is near the teleſcope, than when it is very remote. But as this image muſt be formed farther from the ſmall mirror than its principal focus n, this mirror muſt be always ſet at a greater diſtance from the large one, in viewing near objects, than in viewing remote ones. And this is done by turning the ſcrew on the outſide of the tube, until the ſmall mirror be ſo adjuſted, that the object (or rather its image) appears perfect.

597. In looking through any teleſcope towards an object, we never ſee the object itſelf, but only that image of it which is formed next the eye in the teleſcope. For if a man holds his finger or a ſtick between his bare eye and an object, it will hide part (if not the whole) of the object from his view: But if he ties a ſtick acroſs the mouth of a teleſcope before the object-glaſs, it will hide no part of the imaginary object he ſaw through the teleſcope before, unleſs it covers the whole mouth of the tube: for all the effect will be, to make the object appear dimmer, becauſe it intercepts part of the rays. Whereas, if he puts only a piece of wire acroſs the inſide of the tube, between the eye-glaſs and his eye, it will hide part of the object which he thinks he ſees; which proves, that he ſees not the real object, but its image. This is alſo confirmed by means of the ſmall mirror EF, (*fig.* 3. *Pl.* 261.) in the reflecting teleſcope, which is made of opaque metal, and ſtands directly between the eye and the object towards which the teleſcope is turned; and will hide the whole object from the eye at O, if the two glaſſes ZZ and SS are taken out of the tube.

598. Great improvements have been lately made in the conſtruction of both reflecting and refracting teleſcopes, as well as in the method of applying thoſe inſtruments to the purpoſes for which they are intended. Theſe, however, fall not properly under the ſcience of optics, as fitter opportunities occur of giving a full account of them, as well as of the magic lantern, camera obſcura, &c. under the other articles of our multifarious work. See CATOPTRICS, DIOPTRICS, SPECULUM, and TELESCOPE.

§ V. *Of the different* MERITS *of* MICROSCOPES *and* TELESCOPES; *the* DISCOVERIES *made by them, and of further* IMPROVEMENTS.

599. THE advantages ariſing from the uſe of microſcopes and teleſcopes depend, in the firſt place, upon their property of magnifying the minute parts of objects, ſo that they can be thus more diſtinctly viewed by the eye; and 2dly, upon their throwing more light into the pupil of the eye than what is done without them. The advantages ariſing from the magnifying power would be extremely limited, if they were not alſo accompanied by the latter: for if the ſame quantity of light is ſpread over a large portion of ſurface, it becomes proportionably diminiſhed in force; and therefore the objects, though magnified, appear proportionably dim. Thus, though any magnifying glaſs ſhould enlarge the diameter of the object 10 times, and conſequently magnify the ſurface 100 times, yet if the focal diſtance of

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the glaſs was above 8 inches (provided this was poſſible), and its diameter only about the ſize of the pupil of the eye, the object would appear 100 times more dim when we looked through the glaſs, than when we beheld it with our naked eyes; and this, even on a ſuppoſition that the glaſs tranſmitted all the light which fell upon it, which no glaſs can do. But if the focal diſtance of the glaſs was only 4 inches, though its diameter remained as before, the inconvenience would be vaſtly diminiſhed, becauſe the glaſs could then be placed twice as near the object as before, and conſequently would receive 4 times as many rays as in the former caſe, and therefore we would ſee it much brighter than before. Going on thus, ſtill diminiſhing the focal diſtance of the glaſs, and keeping its diameter as large as poſſible, we will perceive the object more and more magnified, and at the ſame time very diſtinct and bright. It is evident, however, that with regard to optical inſtruments of the microſcopic kind, we muſt ſooner or later arrive at a limit which cannot be paſſed. This limit is formed by the following particulars: 1. The quantity of light loſt in paſſing through the glaſs. 2. The diminution of the glaſs itſelf, by which it receives only a ſmall quantity of rays. 3. The extreme ſhortneſs of the focal diſtance of great magnifiers, whereby the free acceſs of the light to the object which we wiſh to view is impeded, and conſequently the reflection of the light from it is weakened. 4. The aberrations of the rays, occaſioned by their different refrangibility.

600. To underſtand this more fully, as well as to ſee how far theſe obſtacles can be removed, let us ſuppoſe the lens made of ſuch a dull kind of glaſs, that it tranſmits only one half of the light which falls upon it. It is evident that ſuch a glaſs, of 4 inches focal diſtance, and which magnifies the diameter of an object twice, ſtill ſuppoſing its own breadth equal to that of the pupil of the eye, will ſhow it 4 times magnified in the ſurface, but only half as bright as if it was ſeen by the naked eye at the uſual diſtance; for the light which falls upon the eye from the object at 8 inches diſtance, and likewiſe the ſurface of the object in its natural ſize, being both repreſented by 1, the ſurface of the magnified object will be 4, and the light which makes that magnified object viſible only 2; becauſe though the glaſs receives 4 times as much light as the naked eye does at the uſual diſtance of diſtinct viſion, yet one half is loſt in paſſing through the glaſs. The inconvenience in this reſpect can therefore be removed only as far as it is poſſible to increaſe the clearneſs of the glaſs, ſo that it ſhall tranſmit nearly all the rays which fall upon it; and how far this can be done, hath not yet been aſcertained.

601. The 2d obſtacle to the perfection of microſcopic glaſſes is the ſmall ſize of great magnifiers, by which, notwithſtanding their near approach to the object, they receive a ſmaller quantity of rays than might by expected. Thus, ſuppoſe a glaſs of only one 10th of an inch focal diſtance; ſuch a glaſs would increaſe the viſible diameter 80 times, and the ſurface 6400 times. If the breadth of the glaſs could at the ſame time be preſerved as great as that of the pupil of the eye, which we ſhall ſuppoſe two 10ths of an inch, the object would appear magnified 6400 times, at the ſame time that every part of it would be as bright as it appears to the naked eye. But if we ſuppoſe that this magnifying glaſs is only one 26th of an inch in diameter, it will then only receive $\frac{1}{4}$th of the light which otherwiſe would have fallen upon it; and therefore, inſtead of communicating to the magnified object a quantity of illumination equal to 6400, it would communicate only one equal to 1600, and the magnified object would appear 4 times as dim as it does to the naked eye. This inconvenience, however, is ſtill capable of being removed, not indeed by increaſing the diameter of the lens, becauſe this muſt be in proportion to its focal diſtance, but by throwing a greater quantity of light on the object. Thus, in the above-mentioned example, if 4 times the quantity of light which naturally falls upon it could be thrown upon the object, it is plain that the reflection from it would be 4 times as great as in the natural way; and conſequently the magnified image, at the ſame time that it was as many times magnified as before, would be as bright as when ſeen by the naked eye. In tranſparent objects this can be done very effectually by a concave ſpeculum, as in the reflecting microſcope already deſcribed: but in opaque objects the caſe is ſomewhat doubtful; neither do the contrivances for viewing theſe objects ſeem entirely to make up for the deficiencies of the light from the ſmallneſs of the lens and ſhortneſs of the focus.—When a microſcopic lens magnifies the diameter of an object 40 times, it hath then the utmoſt poſſible magnifying power, without diminiſhing the natural brightneſs of the object.

602. The 3d obſtacle ariſes from the ſhortneſs of the focal diſtance in large magnifiers; but in tranſparent objects, where a ſufficient quantity of light is thrown on the object from below, the inconvenience ariſes at laſt from ſtraining the eye, which muſt be placed nearer the glaſs than it can well bear; and this entirely ſuperſedes the uſe of magnifiers beyond a certain degree.

603. The 4th obſtacle ariſes from the different refrangibility of the rays of light, and which frequently cauſes ſuch a deviation from truth in the appearance of things, that many people have imagined themſelves to have made ſurpriſing diſcoveries and have even publiſhed them to the world; when in fact they have been only ſo many optical deceptions, owing to the unequal refractions of the rays. For this there ſeems to be no remedy, except the introduction of achromatic glaſſes into microſcopes as well as teleſcopes. How far this is practicable, hath not yet been tried; but when theſe glaſſes ſhall be introduced (if practicable), microſcopes will then undoubtedly have received their ultimate degree of perfection.

604. With regard to teleſcopes, thoſe of the refracting kind have evidently the advantage of all others, where the aperture is equal, and the aberrations of the rays are corrected according to Mr Dollond's method; becauſe the image is not only more perfect, but a much greater quantity of light is tranſmitted than can be reflected from the beſt materials hitherto known. Unluckily, however, the

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the imperfections of the glaſs ſet a limit to theſe teleſcopes, ſo that they cannot be made above 3½ feet long. On the whole, therefore, the reflecting teleſcopes are preferable in this reſpect, that they may be made of dimenſions greatly ſuperior; by which means they can both magnify to a greater degree, and at the ſame time throw much more light into the eye.

605. With regard to the powers of teleſcopes, however, they are all of them exceedingly leſs than we would be apt to imagine, from the number of times which they magnify the object. Thus, when we hear of a teleſcope which magnifies 200 times, we are apt to imagine, that, on looking at any diſtant object through it, we ſhould perceive it as diſtinctly as we would with our naked eye at the 200th part of the diſtance. But this is by no means the caſe; neither is there any theory capable of directing us in this matter: we muſt therefore depend entirely on experience.

606. The beſt method of trying the goodneſs of any teleſcope is by obſerving, how much farther off you are able to read with it than you can with the naked eye. But that all deception may be avoided, it is proper to chooſe ſomething to be read where the imagination cannot give any aſſiſtance, ſuch as a table of logarithms, or ſomething which conſiſts entirely of figures; and hence the truly uſeful power of the teleſcope is eaſily known. In this way Mr Short's large teleſcope, which magnifies the diameter of objects 1200 times, is yet unable to afford ſufficient light for reading at more than 200 times the diſtance at which we can read with our naked eye.

607. With regard to the form of reflecting teleſcopes, it is now pretty generally agreed, that when the Gregorian ones are well conſtructed, they have the advantage of thoſe of the Newtonian form. One evident advantage is, that with the Gregorian teleſcope an object is perceived by looking directly through it, and conſequently is found with much greater eaſe than in the Newtonian teleſcope, where we muſt look into the ſide. The unavoidable imperfection of the ſpecula, common to both, alſo gives the Gregorian an advantage over the Newtonian form. Notwithſtanding the utmoſt care and labour of the workmen, it is found impoſſible to give the metals either a perfectly ſpherical or a perfectly paraboli-cal form. Hence ariſes ſome indiſtinctneſs of the image formed by the great ſpeculum, which is frequently corrected by the little one, provided they are properly matched. But if this is not done the error will be made much worſe; and hence many of the Gregorian teleſcopes are far inferior to the Newtonian ones; namely when the ſpecula have not been properly adapted to each other. There is no method by which the workman can know the ſpecula which will fit one another without a trial; and therefore there is a neceſſity for having many ſpecula ready made of each ſort, that in fitting up a teleſcope thoſe may be choſen which beſt ſuit each other.

608. The brightneſs of any object ſeen through a teleſcope, in compariſon with its brightneſs when ſeen by the naked eye, may in all caſes be eaſily found by the following formula: Let n repreſent the natural diſtance of a viſible object, at which it can be diſtinctly ſeen; and let d repreſent its diſtance from the object-glaſs of the inſtrument. Let m be the magnifying power of the inſtrument; that is, let the viſual angle ſubtended at the eye by the object when at the diſtance n, and viewed without the inſtrument, be to the viſual angle produced by the inſtrument as 1 to m. Let a be the diameter of the object-glaſs, and p be that of the pupil. Let the inſtrument be ſo conſtructed, that no parts of the pencils are intercepted for want of ſufficient apertures of the intermediate glaſſes. Laſtly, let the light loſt in reflection or refraction be neglected.

609. The brightneſs of viſion through the inſtrument will be expreſſed by the fraction $\frac{a^2 n^2}{m^2 p^2 d^2}$, the brightneſs of natural viſion being 1. But although this fraction may exceed unity, the viſion through the inſtrument will not be brighter than natural viſion. For, when this is the caſe, the pupil does not receive all the light tranſmitted through the inſtrument.

610. In microſcopes, n is the neareſt limit of diſtinct viſion, nearly 8 inches. But a difference in this circumſtance, ariſing from a difference in the eye, makes no change in the formula, becauſe m changes in the ſame proportion with n.

611. In teleſcopes, n and d may be accounted equal, and the formula becomes $\frac{a^2}{m^2 p^2}$.

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OPT OPT

* OPTIMACY. *n. s.* [*optimates*, Lat.] Nobility; body of nobles.—In this high court of parliament there is a rare co-ordination of power, a wholesome mixture betwixt monarchy, *optimacy*, and democracy. *Howel.*

OPTIMATES, one of the divisions of the Roman

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man people, opposed to POPULARES. They were warm supporters of the dignity of the chief magistrate, and promoters of the grandeur of the state, who cared not if the inferior members suffered, provided the commanding powers were advanced: whereas the populares boldly stood up for the rights of the people, pleaded for larger privileges, and laboured to bring matters nearer to a level. In short, they resembled the court and country parties of Britain. Tully says, that the optimates were the best citizens, who wished to deserve the approbation of the better sort; and that the populares courted the favour of the populace, not so much considering what was right, as what would please the people, and gratify their own thirst of vain glory and empty applause.

OPTIMISM. *n. f.* [*optimus*, best, Lat.] the doctrine of the OPTIMISTS, that "Whatever *is*, is *right*", and that "All that happens *is for the best*." See *Voltaire's Candidus*.

OPTIMIST, *n. f.* One who believes in OPTIMISM.

* OPTIMITY. *n. f.* [from *optimus*.] The state of being best.

OPTIO, an officer in the Roman army, an assistant or lieutenant to every centurion; so called because he was the choice or *option* of the centurion in later times: at first, however, he had been chosen by the tribune, or chief commander of the legion. These *optiones* are also sometimes called SUCCENTURIONES and TERGIDUCTORES; the last name was given them because their post was in the rear of the company. Some authors mention *suboptiones*, or sublieutenants. Optiones were not peculiar to the camp, but were also used in a variety of other offices of life.

(1.) * OPTION. *n. f.* [*optio*, Lat.] Choice; election.—He decrees to punish their contumacy finally, by assigning them their own *options*. *Hammond*.—Transplantation must proceed from the *option* of the people, else it sounds like an exile. *Bacon*.—Which of these two rewards we will receive, he hath left to our *option*. *Smallridge*.

(2.) OPTION, in ecclesiastical polity. When a new suffragan bishop is consecrated, the archbishop of the province, by a customary prerogative, claims the collation of the first vacant benefice, or dignity, in that see, according as he shall choose; which choice is called the archbishop's *option*. But if the bishop dies, or is translated, before the incumbent of the promotion chosen by the archbishop die or be removed, it is generally supposed that the option is void; as the granter, singly and by himself, could not convey any right or title beyond the term of his continuance in that see. And if the archbishop dies before the voidance happen, the right of filling up the vacancy shall go to his executors or administrators.

OPTIONAL, *adj.* in one's option; free to be chosen, or refused.

OPTO-KILTEKAI, a town of Chinese Tartary. Lon. 110. 40. E. Ferro. Lat. 44. 8. N.

* OPULENCE. } *n. f.* [*opulence*, Fr. *opulentia*,
* OPULENCY. } Latin.] Wealth; riches; affluence.—It must be a discovery of the infinite flatteries that follow youth and *opulency*. *Shak. Timon*.—After eight years spent in outward *opulency*, and inward murmur that it was not greater, he died unlamented. *Clarendon*.—He had been a person, not only of great *opulency*, but authority. *Atterbury*.

There in full *opulence* a banker dwelt,
Who all the joys and pangs of riches felt. *Swift*.

* OPULENT. *adj.* [*opulent*, Fr. *opulentus*, Lat.] Rich; wealthy; affluent.—He made him his ally, and provoked a mighty and *opulent* king by an offensive war in his quarrel. *Bacon*.—To begin with the supposed policy of gratifying only the rich and *opulent*. *South*.

* OPULENTLY. *adv.* [from *opulent*.] Richly; with splendour.

OPUNTIA, the prickly pear tree, a species of cactus; see CACTUS. The fruit of the opuntia is remarkable for colouring the juices of living animals, though it appears not to be poisonous or even hurtful to the body. In a letter from Charlestown in S. Carolina, inserted in the 50th vol. of the *Philos. Transf.* the author writes thus:—"As you desired, I have tried the effects of the prickly pear in clearing the urine. I went down to one of the islands, and gathered some of the fruit, and gave 4 pears to a child of 3 years of age, and six to one of 5. The next morning I examined the urine of both, and it appeared of a very lively red colour, as if tart wine had been mixed with water. I gave likewise six pears to a negro wench, who was suckling an infant, and strictly forbade her to put the child to her breast for 6 or 8 hours; and then taking some of her milk in a tea-cup, and setting it by for some hours, the cream had a reddish lustre, though it was very faint." He adds, that the prickly pear grows in great abundance about Carolina; and that the cochineal insects are found upon it, though no attempt has yet been made to cure them for use as the Spaniards do.

OQUENDO, a town of Spain in the province of Alava; 5 miles SE. of Orduna.

(1, 1.) * OR. *conjunct.* [*other*, Saxon.] 1. A disjunctive particle, marking distribution, and sometimes opposition.—Inquire what the ancients thought concerning this world, whether it was to perish *or* no; whether to be destroyed *or* to stand eternally? *Burnet*.—

He my muse's homage should receive,
If I could write, *or* Hollis could forgive. *Garth*.—By intense study, *or* application to business that requires little action, the digestion of foods will soon proceed more slowly. *Blackmore*.—Every thing that can be divided by the mind into two *or* more ideas, is called complex. *Watts' Logic*. 2. It corresponds to *either*; he must *either* fall *or* fly.—At Venice you may go to any house *either* by land *or* water. *Addison*. 3. It sometimes, but rather inelegantly, stands for *either*.—

For thy vast bounties are so numberless,
That them *or* to conceal, or else to tell,
Is equally impossible. *Cowley*.

4. *Or* is sometimes redundant, but is then more properly omitted. How great soever the sins of any unreformed person are, Christ died for him because he died for all; only he must reform or forsake his sins, *or* else he shall never receive benefit of his death. *Hammond*. 5. [*Or*, or *ere*, Sax.] Before; *or ever*, is *before ever*. Obsolete. *Or*

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we go to the declaration of this pſalm, it ſhall be convenient to ſhew who did write this pſalm. *Fiſher.*—

Good men's lives
Expire before the flowers in their cups,
Dying *or ere* they ſicken. *Shak. Macbeth.*

—Learn before thou ſpeak, and uſe phyſick *or ever* thou be ſick. *Ecclus.* xviii. 19.

(2.) OR. See remarks on the abuſe of this word, under LANGUAGE, *Sect.* VIII; NEITHER, § 2; and NOR, § 2.

(II. i.) * OR. *n. ſ.* [French.] Gold. A term of heraldry.—

The ſhow'ry arch
With liſted colours gay, *or*, azure, guler,
Delights and puzzles the beholders eyes. *Philips.*

(ii.) OR, the French word for gold, by which this metal is expreſſed in heraldry. In engraving it is denoted by ſmall points all over the field or bearing. It may be ſuppoſed to ſignify of itſelf, *generoſity*, *ſplendor*, or *ſolidity*; according to G. Leigh, if it is compounded with *Gules*, it ſignifies Courage; *Azure*, Truſt; *Vert*, Joy; *Purpure*, Chaſtity; and *Sable*, Conſtancy.

(III. 1.) OR, in geography, a river of England, in Suffolk, which runs into the German Ocean, a little below Orford.

(2.) OR, a lake of Norway, in Aggerhuus, 36 miles N. of Chriſtiania.

(3.) OR, CAPE, a cape of Nova Scotia N. of Minas.

(1.) ORA, in antiquity, was a term equivalent to an ounce; but it has been much debated among antiquaries, whether the ora was a coin, or only money of account. Dr. Hickes ſays, that the mode of reckoning money by marks and oras was never known in England till after the Daniſh invaſions; and from the old nummulary eſtimates among the principal Gothic ſtates upon the Baltic, it appears, that the ora and ſolidus were ſynonymous terms, and that the ora was the 8th part of the mark. From ſeveral Daniſh laws, it likewiſe appears, that the Daniſh ora, derived by corruption from *aureus*, was the ſame as the Frank ſolidus of 12d. As a weight the ora was regarded as the UNCIA or unit, by which the Daniſh mark was divided; and in Doomſday book the ora is uſed for the ounce, or the 12th part of the nummulary Saxon pound; and the 13th of the commercial: as a coin, it was an aureus, or the Frank ſolidus of 12d. There was another ora mentioned in the rolls of the 27th of Henry III. the value of which was 16 pence; and this was probably derived from the half mancus of the Saxons. Such, in all appearance, was the original of theſe two oras; as there were no *denarii* of that period, to which theſe two denominations of money of 16 and 12 pence can poſſibly be aſcribed. The name *ora* diſtinguiſhes the gold coins in ſeveral parts of Europe to this day. The Portugueſe moidore is nothing elſe but *moeda d'oro*, from the Latin *moneta de auro*; the French *Louis d'ores* come from the ſame uſe of the word, and owe their appellation to the ora. See *Clarke on Coins.*

(2.) ORA, an ancient town of India, which was taken by Alexander the Great.

ORABY, a town of Sweden, in Schonen.

(1.) ORACH, a town of Boſnia, capital of a Sangiacat, 72 miles SE. of Serajo, and 97 SSW. of Belgrade.

(2.) * ORACH. *n. ſ.* [*atriplex.*] A plant. There are 13 ſpecies; garden *orach* was cultivated as a culinary herb, and uſed as ſpinach, though it is not generally liked by the Engliſh, but ſtill eſteemed by the French. *Miller.*

(3.) ORACH. See ATRIPLEX.

(4.) ORACH, BERRY-BEARING. See BLITUM.

(5.) ORACH, CREEPING SHRUBBY. See ATRAPHAXIS.

(6.) ORACH, WILD. See CHENOPODIUM.

ORACHAU, a lake of Sileſia, in Glogau.

(1.) ORACLE. *n. ſ.* [*oracle*, Fr. *oraculum*, Lat.] 1. Something delivered by ſupernatural wiſdom.—The main principle, whereupon our belief of all things therein contained dependeth, is, that the ſcriptures are the *oracles* of God himſelf. *Hooker.* 2. The place where, or perſon of whom the determinations of heaven are enquired.—

Why, by the verities on thee made good,
May they not be my *oracles* as well,
And ſet me up in hope? *Shak. Macbeth.*

God hath now ſent his living *oracle*
Into the world to teach his final will,
And ſends his ſpirit of truth henceforth to dwell,
In pious hearts, an inward *oracle.* *Milton.*

3. Any perſon or place where certain deciſions are obtained.—

There mighty nations ſhall enquire their doom,
The world's great *oracle* in times to come. *Pope.*

4. One famed for wiſdom; one whoſe determinations are not to be diſputed.

(2.) ORACLE, in ſacred hiſtory, is ſometimes uſed for the mercy-ſeat, or the cover of the ark of the covenant; and by others it is taken for the ſanctuary, or for the moſt holy place, wherein the ark was depoſited. Among the Jews we may diſtinguiſh ſeveral ſorts of *real* oracles. They had firſt oracles that were delivered *viva voce*; as when God ſpake to Moſes face to face, as one friend ſpeaks to another, (Numb. xii. 8.) 2. Prophetical dreams ſent by God: as the dreams which God ſent to Joſeph, and which foretold his future greatneſs, (Gen. xxxvii. 5, 6.) 3. Viſions; as when a prophet in an ecſtaſy, being neither properly aſleep nor awake, had ſupernatural revelations. (Gen. xv. 1. xlvi. 2.) 4. The oracle of URIM AND THUMMIM, which was accompanied with the ephod or the pectoral worn by the high-prieſt, and which God had endued with the gift of foretelling things to come, (Numb. xii. 6. Joel ii. 28.) This manner of enquiring of the Lord was often made uſe of, from Joſhua's time to the erection of the temple at Jeruſalem. Fifthly, After the building of the temple, they generally conſulted the prophets, who were frequent in Judah and Iſrael. From Haggai, Zechariah, and Malachi, who are the laſt of the prophets that have any of their writings remaining, the Jews pretend that God gave them what they call BATH-KOL, the daughter of the voice, which was a ſupernatural manifeſtation of the will of God, performed either by a ſtrong inſpiration or internal voice, or elſe by a ſenſible and external voice, which was heard by a number of perſons ſufficient to bear teſtimony of it. For example, ſuch was the voice that

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that was heard at the baptism of Jesus Christ. (Matth. iii. 17.) The scripture affords us examples likewise of profane oracles. Balaam, at the instigation of his own spirit, and urged on by his avarice, fearing to lose the recompense that he was promised by Balak king of the Moabites, suggests a diabolical expedient to this prince, of making the Israelites fall into idolatry and fornification (Numb. xxiv. 14. xxxi. 16.), by which he assures him of a certain victory, or at least of considerable advantage against the people of God. See also 1 Kings xxii. 21, &c. The dialogue there recorded proves two things; *first*, that the devil could do nothing by his own power; and, *2dly*, that with the permission of God, he could inspire the false prophets, sorcerers, and magicians, and make them deliver false oracles.

(3.) ORACLE, among the heathens, was the answer, which the gods were supposed to give to those who consulted them upon any affair of importance. The credit of oracles was so great, that in all doubts and disputes their determinations were held sacred and inviolable: whence vast numbers flocked to them for advice; and no business of importance was undertaken, scarce any peace concluded, any war waged, or any new form of government instituted, without the advice and approbation of some oracle. The answers were given by the priest or priestess of the god who was consulted; and generally expressed in such dark and ambiguous phrases as might be easily wrested to prove the truth of the oracle whatever was the event. It is not, therefore, to be wondered at, that the priests who delivered them were in the highest credit and esteem, and that they managed this reputation so as greatly to promote their own advantage. They accordingly allowed no man to consult the gods, before he had offered costly sacrifices, and made rich presents to them. And to keep up the veneration for their oracles, and to prevent their being taken unprepared, they admitted persons to consult the gods only at certain stated times; and sometimes they were so cautious, that the greatest personages could obtain no answer at all.

(4.) ORACLES, FAMOUS ANCIENT. The most ancient oracle was that of Dodona (see DODONA); but the most famous was that of DELPHI, to which article we also refer for further particulars on this subject, so famous in Pagan antiquity. Another celebrated one was the oracle of Trophonius, in the neighbourhood of Lebadia, a city of Bœotia, which was held in high estimation. It received its name from Trophonius, brother of Agamedes, who lived in a subterraneous dwelling near Lebadia, and pretended to the faculty of foretelling future events. He died in his cave, and was deified as an oracular god. This oracle owed its reputation to one Saon. Those who repaired to this cave for information, were required to offer certain sacrifices, to anoint themselves with oil, and to bathe in a certain river: They were then clothed in a linen robe, took a honeyed cake in their hands, and descended into the subterraneous chamber by a narrow passage. Here it was that futurity was unfolded to them, either by visions or extraordinary sounds. The return from the cave was by the same passage, but the persons consulting were obliged to walk backwards. They generally came out astonished, melancholy, and dejected; hence the proverb, Εις Τροφωνιου μεμανθανται. The priests on their return placed them on an elevated seat, called *the seat of Mnemosyne*, where an account was taken of what they had seen and heard. They were then conducted to the chapel of good Genius by their companions, where, by degrees, they recovered their usual composure and cheerfulness. Besides these three principal oracles of Greece, that of Amphiaraus, at Oropius in Attica, was famous. It was so called from Amphiaraus, the son of Oicleus, a man skilled in magic, the interpretation of dreams, &c. and who after his death was deified and delivered oracles in a temple erected to his divinity. (See AMPHIARAUS.) They who applied to him for information were to purify themselves, offer sacrifice, fast 24 hours, abstain from wine two days, and make an offering of a ram to Amphiaraus; on the skin of which they were to sleep, and see their destiny in a dream. Near the temple was Amphiaraus's fountain, which was sacred, and the waters of it forbidden to be used for ordinary purposes. At Delos also there was an oracle of the Delian Apollo: in Milesia was that of the Branchidæ, with others of less note, such as that of the camps at Lacedæmon, that of Nabarcha, and those of Chrysopolis, Claros in Ionia, Mallos, Patarea, Pella, Phaselides, Sinope, Orpheus's head, &c. Though the Romans consulted the Grecian oracles upon many occasions, and had few oracles in their own country; yet we must not omit mentioning the Cumæan oracles, which were delivered by the Sibyl of Cumæ. For an account of the Sibyls, see the article SIBYL. See also DÆMON and DÆMONIAC. Of the oracles of false gods, there was a far greater number than our limits permit us to enumerate.

(5.) ORACLES, TRADITIONS, AND ARGUMENTS AS TO THE CESSATION OF. It has been generally held by the early writers in the Christian church, that oracles ceased at the birth of Jesus Christ: Yet some have endeavoured to maintain the contrary, by showing that they were in being in the days of Julian, commonly called *the Apostate*, and that this emperor himself consulted them; nay, farther, say they, history makes mention of several laws published by the Christian emperors, Theodosius, Gratian, and Valentinian, to punish persons who interrogated them, even in their days; and that the Epicureans were the first who made a jest of this superstition, and exposed the roguery of its priests to the people. As we suspect most of the facts here asserted, should be understood in a qualified sense, we shall discuss this point in as few words as possible, although it is undoubtedly a matter of some consequence. 1*st*, The question, properly stated, is not, whether oracles became extinct *immediately on the birth of Christ*, or from the very moment he was born? but, If they fell gradually into disesteem, and ceased, as Christ and his gospel became known to mankind? And that they did so, is most certain, from the concurrent testimonies of the fathers, which, whoever would endeavour to invalidate, may equally

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give up the moſt reſpectable traditions and hiſtory of every kind. *2dly*, But did not Julian the Apoſtate conſult theſe oracles? We anſwer in the negative: he had indeed recourſe to magical operations, but it was becauſe oracles had already ceaſed; for he bewailed the loſs of them, and aſſigned pitiful reaſons for it; which St Cyrill refuted, adding, that *he never could have offered ſuch, but from unwillingneſs to acknowledge that when the world had received the light of Chriſt, the dominion of the devil was at an end.* *3dly*, The Chriſtian emperors do indeed ſeem to condemn the ſuperſtition and idolatry of thoſe who were ſtill for conſulting oracles; but the edicts of thoſe princes do not prove that oracles actually exiſted in their times, any more than that they ceaſed in conſequence of their laws. It is certain, that they were for the moſt part extinct before the converſion of Conſtantine. *4thly*, Some Epicureans might *make a jeſt of this ſuperſtition*: however the Epicurean philoſopher Celſus, in the 2d century, was for crying up the excellency of ſeveral oracles, as appears from Origen's 7th book againſt him.

* *To* ORACLE. *v. n.* [from the noun.] To utter oracles. A word not received.—

No more ſhalt thou by *oracling* abuſe
The Gentiles. *Milton.*

* ORACULAR. } *adj.* [from *oracle.*] 1. Ut-
* ORACULOUS. } tering oracles; reſembling oracles.—

Urim and Thummim, thoſe *orac'lous* gems
On Aaron's breaſt. *Milton.*

What nation ſhall have peace, where war be made,
Determin'd is in this *orac'lous* ſhade. *Waller.*

—They have ſomething venerable and *oracular*, in that unadorned gravity and ſhortneſs in the expreſſion. *Pope.*—

Th' *orac'lous* ſeer frequents the Pharian coaſt,
Proteus, a name tremendous o'er the main. *Pope.*

2. Poſitive; authoritative; magiſterial; dogmatical.—The particular expreſſions of their ſentiments are as *oraculous* as if they were omniſcient. *Glanville.* 3. Obſcure; ambiguous; like the anſwers of ancient oracles.—

He ſpoke *oraculous* and ſly,
He'd neither grant the queſtion, nor deny. *King.*

* ORACULOUSLY. *adv.* [from *oraculous.*] In manner of an oracle.—The teſtimonies of antiquity, and ſuch as paſs *oraculouſly* amongſt us, were not always ſo exact as to examine the doctrine they delivered. *Brown.*—

Hence riſe the branching beech and vocal oak,
Where Jove of old *oraculouſly* ſpoke. *Dryden.*

* ORACULOUSNESS. *n. ſ.* [from *oracular.*] The ſtate of being oracular.

(1, 2.) ORADOUR, 3 towns of France; 1. in the dep. of Cantal, 10 miles SSW. of St Flour, and 21 E. of Aurillac: 2. in that of Upper Vienne, 18 miles SW. of Limoges: and,

(3.) ORADOUR FANOIS, in that of Charente; 6 miles N. of Confolent.

(1.) ORÆA, certain ſolemn ſacrifices of fruits which were offered in the four ſeaſons of the year, in order to obtain mild and temperate weather. They were offered to the goddeſſes who preſided over the ſeaſons, who attended upon the ſun, and who received divine worſhip at Athens.

(2.) ORÆA, a diſtrict of Peloponneſus.

ORAHOVITZA, a town of Sclavonia.

(1.) * ORAISON. *n. ſ.* [*oraiſon*, Fr. *oratio*, Lat.] Prayer; ſupplication; or oral worſhip: more frequently written *oriſon*. This word is pronounced ſhort both by *Shakeſpeare* and *Dryden*; *oriſon* is ſometimes long and ſometimes ſhort.—

Stay, let us hear the *oraiſons* he makes. *Shak.*

An active life long *oraiſons* forbids,
Yet ſtill ſhe pray'd, for ſtill ſhe pray'd by deeds. *Dryden.*

(2.) ORAISON, in geography, a town of France, in the dep. of the Lower Alps, and diſtrict of Digne, on the Durance, 18 miles SW. of Digne.

(1.) * ORAL. *adj.* [*oral*, Fr. *os, oris*, Lat.] Delivered by mouth; not written.—*Oral* diſcourſe, whoſe tranſient faults dying with the ſound that gives them life, and ſo not ſubject to a ſtrict review, more eaſily eſcapes obſervation. *Locke.*—St John was appealed to as the living oracle of the church; and as his *oral* teſtimony laſted the firſt century; many have obſerved, that by a particular providence ſeveral of our Saviour's diſciples, and of the early converts, lived to a very great age, that they might perſonally convey the truth of the goſpel to thoſe times which were remote. *Addiſ.*

(2.) ORAL TRADITION. See TRADITION.

* ORALLY. *adv.* [from *oral.*] By mouth: without writing.—Oral traditions were incompetent, without written monuments, to derive to us the original laws of a kingdom, becauſe they are complex, not *orally* troubleſome to ſo great a diſtance of ages. *Hale.*

ORAMANE, a river of Canada, which runs into the Gulf of St Lawrence. Lon. 61°. W. Lat. 50. 7. N.

ORAMAZ, the great god of the ancient Perſians. See MYSTERIES, § 14, 16.

ORAMTCHI HOTUN, a town of Thibet.

ORAN, a very ſtrong town of Barbary, in the kingdom of Tremecen, with ſeveral forts, and an excellent harbour. It is ſeated partly on the ſide of a hill, and partly on a plain, about a ſtone-caſt from the ſea, almoſt oppoſite to Carthagena in Spain. It is about a mile and an half in circumference, and well fortified, but commanded by the adjacent hills. It was taken by the Spaniards, in 1509, and retaken by the Algerines in 1708; but in 1732 the Spaniards became maſters of it, and have continued ſo ever ſince. Lon. 0. 8. E. Lat. 36. 2. N.

ORANAI, one of the SANDWICH iſlands; 9 miles from Mowee and Morotoi. Lon. 156. 52. W. Lat. 20. 46. N.

(1.) ORANGE, in geography, a ci-devant principality of France, which was united to Dauphine, and is now included in the dep. of the Mouths of the Rhone. It was a very ſmall diſtrict, being only 12 miles long and 9 broad, the revenue amounted to about 50001. a year. The country is pleaſant, and abounds with corn and fruit, but is expoſed to violent winds.

(2.) ORANGE, a famous city of France, in the dep. of the Mouths of the Rhone, and late capital of the above principality, with a univerſity. It

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is ſeated in a fine large plain, watered by a vaſt number of little rivulets on the E. ſide of the Rhone. It is a very large ancient place, and was conſiderable in the time of the Romans, who adorned it with ſeveral buildings, of which there are ſtill ſome ruins left, particularly of an amphitheatre, and a triumphal arch, which is almoſt entirely dedicated to Marius. This city was formerly much larger, as appears from the traces of the ancient walls. The wall was in 1682 entirely demoliſhed by order of Lewis XIV. and the inhabitants were expoſed to the fury of the ſoldiers. The city was reſtored to King William III. by the treaty of Ryſwick; but after his death the French took it again, and expelled the proteſtant inhabitants. By the treaty of Utrecht it was confirmed to France, though the title is ſtill retained by the houſe of Naſſau. It was firſt introduced into the family of Naſſau by the marriage of Claude de Chalons, the prince of Orange's ſiſter, with the count of Naſſau, 1530. Lon. 4. 49. E. Lat. 44. 9. N.

(3, 4.) ORANGE, or ORANGE BAY, two bays of Jamaica, the one on the NE. coaſt, near Crawford's Town; the other on the NW. coaſt, between Green Iſland and N. Negril harbour.

(5.) ORANGE, a townſhip of Maſſachuſetts, on the E. line of Hampſhire county, 94 miles NW. of Boſton. It contained 784 citizens in 1795.

(6.) ORANGE, a townſhip of New Hampſhire, in Grafton county, 20 miles E. of Dartmouth College.

(7.) ORANGE, or ORANGEDALE, a town of New Jerſey, in Eſſex county, with a preſbyterian church, and a flouriſhing academy; 70 miles NE. of Philadelphia.

(8.) ORANGE, a mountainous county of New York, bounded N. by Ulſter, E. by the Hudſon, S. and SW. by New Jerſey, and W. by Pennſylvania and the Delaware. It is 68 miles long, and 27 broad, and comprehends 8 townſhips, beſides the extenſive tract called DROWNED LANDS. (See that article.) In 1795, it contained 17,526 citizens, of whom 2098 were electors, and 966 ſlaves. Goſhen is the capital. See GOSHEN, N° 5.

(9.) ORANGE, a county of N. Carolina, in Hillſborough diſtrict, bounded N. by Caſwell, E. by Granville, S. by Chatham, and W. by Guildford counties. It contained 10,156 citizens, and 2066 ſlaves in 1795. The ſoil is fertile and well watered. Hillſborough is the capital.

(10.) ORANGE, a county of S. Carolina, in the diſtrict of Orangeburg.

(11.) ORANGE, a county of Vermont, bounded on the N. by Canada; E. by the Connecticut and New Hampſhire; S. by Windſor, and W. by Chittendon and Addiſon counties. It is 82 miles long, and 44 broad; and contains 43 townſhips. It had 10,529 citizens in 1795, but not one ſlave. Newbury is the capital.

(12.) ORANGE, a townſhip on the N. line of the above county.

(13.) ORANGE, a county of Virginia, bounded on the N. by Culpepper; E. by Spotſylvania, SE. by Louiſa, S. by Albemarle, and NW. by Rockingham counties. It is 60 miles long, 10 broad, and contained 5500 citizens, and 4421 ſlaves in 1795.

(14.) ORANGE, Prince of. See MAURICE, N° 5.

(15.) ORANGE, in botany. See CITRUS and ORANGE-TREE.

(16.) * ORANGE, *n. ſ.* [*orange*, Fr. *aurantia*, Lat.] The leaves have two lobes or appendages at their baſe, like ears, and cut in form of a heart; the fruit is round and depreſſed, and of a yellow colour when ripe, in which it differs from the citron and lemon. The ſpecies are eight. *Miller.*—I will diſcharge it in your ſtraw-colour'd beard, your *orange*-tawney beard. *Shak. Midſ. Night's Dream.*—The notary came aboard, holding in his hand a fruit like an *orange*, but of colour between *orange*-tawny and ſcarlet, which caſt a moſt excellent odour. *Bacon's New Atlantis.*—The ideas of *orange colour* and azure, produced in the mind by the ſame infuſion of lignum nephriticum, are no leſs diſtinct ideas, than thoſe of the ſame colours taken from two different bodies. *Locke.*—

Fine *oranges*, ſauce for your veal,
Are charming when ſqueez'd in a pot of brown ale. *Swift.*
The *orange* breath'd its aromatic pow'rs. *Harte.*

(17.) ORANGE, MOCK. See PHILADELPHUS.

(18.) ORANGE, RAMOSE, or BRANCHED, in natural hiſtory, is a ſubſtance of the ſame kind with the SEA ORANGE, (N° 20.) and is mentioned and deſcribed by Count Marſigli, Triumfetti, and others. This is very much of the nature of the other; but, inſtead of conſiſting of one round globule, it is formed of ſeveral oblong ones, all joined together, and repreſenting the branches of ſome of the fucuſes; only they are ſhorter; and theſe are all hollow and full of water, in the ſame manner as the ſingle globes of the common kind. This has, by way of root, certain fine and ſlender filaments, which faſten it to the ſtones or ſhells near which it is produced; and it is of a duſky greeniſh colour on the ſurface, and of a fine bluiſh green within. The ſurface, viewed by the microſcope, appears rough, as in the other, and the glandules are of the ſame kind, and are always found full of clear water. See CORALLINES.

(19.) ORANGE RIVER, a river of Jamaica, which runs into the ſea, 4 miles E. of Montego Bay.

(20.) ORANGE, SEA, in natural hiſtory, a name given by Count Marſigli to a very remarkable ſpecies of marine ſubſtance, which he denominates a *plant*. It is tough and firm in its ſtructure, and in many things reſembles the common fucus; but inſtead of growing into the branched form which the generality of thoſe ſubſtances have, it is round and hollow, and in every reſpect reſembles the ſhape of an orange. It has, by way of root, ſome exceeding fine filaments, which faſten themſelves to the rocks, or to ſhells, ſtones, or any thing elſe that comes in the way. From theſe there grows no pedicle; but the body of the orange, as it is called, is faſtened by them to the rock, or other ſolid ſubſtance. The orange itſelf is uſually of about 3 or 4 inches in diameter; and while in the ſea, is full of water, and even retains it when taken up. In this ſtate it frequently weighs a pound and a half; but when the water is let out, and it is dried, it becomes a mere membrane, weighing ſcarce any thing. It is beſt preſerved, by

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by ſtuffing it with cotton as ſoon as the water is let out of it, and then hanging it up to dry. Its ſurface is irregular and rough, and its colour a duſky green on the outſide, and a clearer but ſomewhat bluiſh green within; and its thickneſs is about an eighth part of an inch. When viewed by the microſcope, it is ſeen to be all over covered with ſmall glandules, or rather compoſed of them; for they ſtand ſo thick one by another, as to leave no ſpace between, and ſeem to make up the whole ſubſtance; ſo that it appears very like the rough ſhagreen ſkin uſed to cover toys. Theſe are indeed ſo many hollow ducts, through which the ſea-water finds a paſſage into the globe formed by this ſkin, and by theſe means it is kept always full and diſtended; on cutting it with a pair of ſciſſars, the water immediately runs out, and the ſkins collapſe; but there is ſomething extremely remarkable in this, for the whole ſubſtance, near the wounded place, is in motion, and ſeems as if alive, and ſenſible of the wound. The glandules are found full of water, and reſembling ſmall tranſparent bottles; and what goes to the ſtructure of the plant beſides theſe, is an aſſemblage of a vaſt number of filaments, all which are likewiſe hollow, and filled with a clear and tranſparent fluid.

ORANGEADE, *n. ſ.* A drink made of orange juice, ſugar, and water. *Aſh.*

ORANGE BAY. See ORANGE, N° 3, 4.

(1.) ORANGEBURG, a town and palace of Brandenburg, on the Harel, near Berlin.

(2.) ORANGEBURG, a diſtrict of S. Carolina, bounded on the NE. by the Congaree; E. by the Santee; SE. by Charleſtown diſtrict; SW. by the Savannah, and W. by Ninety-Six. It is 75 miles long, and 73 broad. It is divided into 4 counties; viz. ORANGE, Winton, Lewiſburg, and Lexington; and, in 1795, contained 12,582 citizens, and 5931 ſlaves.

(3.) ORANGEBURG, the capital of the above diſtrict, is ſeated on the E. bank of the N. branch of the Ediſto; 70 miles NNW. of Charleſtown, and 597 from Philadelphia. It ſends one member to Congreſs, three to the Senate, and ten to the houſe of Repreſentatives.

ORANGEDALE. See ORANGE, N° 7.

ORANGE-DEW, a kind of dew which falls in the ſpring-time from the leaves of orange and lemon trees, which is extremely fine and ſubtile. M. De la Hire, obſerving this, placed ſome flat pieces of glaſs under the leaves to receive it; and having procured ſome large drops of it, was deſirous of diſcovering what it was. He ſoon found that it was not a merely aqueous fluid, becauſe it did not evaporate in the air; and that it was not a reſin, becauſe it readily and perfectly mixed with water: it was natural then to ſuppoſe it a liquid gum; but neither did this, on examination, prove to be the caſe; for being laid on paper, it did not dry as the other liquid gums do. Its anſwering to none of theſe characters, and its being of the conſiſtence of honey, and of a ſweet ſugar-like taſte, gave a ſuſpicion of its being a kind of manna; and whatever in the other trials had proved it not a reſin, a gum, &c. all equally tends to prove that it is this ſubſtance.

ORANGE-FLOWERS. See ORANGE-TREE.

ORANGE-KEY, an iſland in Orange Bay, at the NW. end of Jamaica.

ORANGE-MEN, a political party in Ireland, who flouriſhed previous to, and during the late rebellion, in 1798. Their profeſſed principles were to ſupport the Proteſtant Aſcendancy. "With more zeal than judgment," (ſay the compilers of the Annual Regiſter for 1798, p. 166.) "they aſſumed the external marks of party diſtinction, and as the memory of William III. was juſtly held in veneration by the Proteſtants of Ireland, as their great deliverer, the party were diſtinguiſhed by the name of *Orange-men*. In the county of Armagh, the two parties entered into actual and violent contentions; and whatever might have been the ſpirit or conduct of the Papiſts, the Orange-men did not conduct themſelves with temper. They are charged with outrages, which, if true, would diſgrace any cauſe; with burning houſes, and with a ſettled plan for expelling all catholics from the county and province."

(1.) * ORANGE-MUSK. *n. ſ.* A ſpecies of pear.

(2.) ORANGE-MUSK. See PYRUS, N° 1.

ORANGE-PEEL. See CITRUS and ORANGE-TREE.

* ORANGERY. *n. ſ.* [*orangerie*, Fr.] Plantation of oranges.—A kitchen garden is a more pleaſant ſight than the fineſt *orangery*, or artificial green-houſe. *Spectator.*

* ORANGETAWNEY. *n. ſ.* [*orange* and *tawney.*] Red, reſembling an orange.—Baronets, or knights of Nova Scotia, are commonly diſtinguiſhed from others by a ribbon of *orangetawney*. *Heylyn.*

(1.) ORANGETOWN, a townſhip of the United States, in Cumberland county, Maine. It is mountainous, and precipitous, but fertile; and formerly abounded with deer, mooſe deer, beavers, racoons, ſables, bears, wolves, &c. which are now moſtly extirpated.

(2.) ORANGETOWN, a town of Maine, in Waſhington county, 19 miles from Machias.

(3.) ORANGETOWN, a townſhip of New York, in Orange county, on the W. ſide of the Tappan ſea, oppoſite Philipſburg, 27 miles N. of New York. It contained 972 citizens, 162 electors, and 203 ſlaves, in 1795.

(4.) ORANGETOWN, a town of Virginia, 17 miles WSW. of Frederickſburg.

ORANGE-TREE, in botany. See CITRUS, N° 1. ORANGE-FLOWERS are juſtly eſteemed one of the fineſt perfumes; and though little uſed in medicine, yet the water diſtilled from them is accounted ſtomachic, cordial, and carminative. The fruit is cooling, and good in feveriſh diſorders, and particularly in diarrhœas. Orange-peel is an agreeable aromatic, proper to repair and ſtrengthen the ſtomach, and gives a very grateful flavour to any infuſions or tinctures into whoſe compoſitions it enters. It is particularly uſeful in preparations of the bark; gives an agreeable warmth to the infuſion; and, according to Dr Percival, conſiderably increaſes its virtue. In the *Philoſ. Trans.* N° 114, there is a very remarkable account of a tree ſtanding in a grove near Florence, having an *orange* ſtock, which had been ſo grafted upon, that it became, in its branches, leaves, flower, and fruit, three-formed: ſome emulating the

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the orange, ſome the lemon or citron, and ſome partaking of both forms in one; and what was very remarkable, was, that theſe mixed fruits never produced any perfect ſeeds; ſometimes there were no ſeeds at all in them, and ſometimes only a few empty ones.

* ORANGEWIFE. *n. ſ.* [*orange* and *wife*. A woman who ſells oranges.—You wear out a good wholeſome forenoon in hearing a cauſe between an *orangewife* and a foſſet-ſeller. *Shak.*

ORANG-OUTANG. See SIMIA and ZOOTOMY.

(1.) ORANIENBAUM, a town of Upper Saxony, in Anhalt Deſſau, built in 1688; 6 miles SE. of Deſſau.

(2.) ORANIENBAUM, a town of Ruſſia, on the Gulf of Finland; with a palace built by prince Menzikoff, and much uſed by Peter III. 20 miles W. of Peterſburg. Lon. 47. 12. E. Ferro. Lat. 59. 52. N.

ORANIENBURG, a town of Brandenburg, on the Havel, 18 miles N. of Berlin, and 28 NNE. of Potsdam. It was burnt in 1671.

ORANMORE, a town of Ireland, in Galway.

ORANSA. See ORONSAY.

ORARIUM, in old records, an ancient veſtment worn by the prieſts. *Aſh.*

ORATAVIA, the capital of the iſland of Teneriffe; 150 miles W. of the African coaſt. Lon. 16. 20. W. Lat. 28. 23. N.

(1.) * ORATION. *n. ſ.* [*oration*, Fr. *oratio*, Lat.] A ſpeech made according to the laws of rhetorick; a harangue; a declamation.—

There ſhall I try
In my *oration*, how the people take
The cruel iſſue of theſe bloody men. *Shak.*

—This gives life and ſpirit to every thing that is ſpoken, and adds a ſingular grace and excellency both to the perſon and his *oration*. *Watts.*

(2.) *An* ORATION, is a ſpeech delivered in public. Orations may be reduced to three kinds, viz. the demonſtrative, deliberative, and judicial. To the demonſtrative kind belong panegyrics, genethliaca, epithalamia, congratulations, &c. To the deliberative kind belong perſuaſion, exhortation, &c. And to the judicial kind belong accuſation, confutation, &c.

(3.) ORATION, FUNERAL. See FUNERAL, § 4.

(1.) ORATOR, *n. ſ.* among the ancient Romans, differed from a *patronus*: The latter was allowed only to plead cauſes on behalf of his clients; whereas the former might quit the forum and aſcend the roſtra or tribunal, to harangue the ſenate or the people. The orators had rarely a profound knowledge of the law, but they were eloquent, and their ſtyle was generally correct and conciſe. They were employed in cauſes of importance, inſtead of the common patrons. Orators, in the violence of elocution, uſed all the warmth of geſture, and even walked backwards and forwards with great heat and emotion. Similar to the Roman orators were the Grecian *Rhetores*. See RHETORES.

(2.) ORATOR, PUBLIC, an office of very conſiderable dignity, and of ſome emolument in the Engliſh univerſities. The public orator is the principal, and in many caſes the only oſtenſible, agent for the univerſity in all thoſe matters or forms which are merely external. He carries on or ſuperintends all correſpondences which are calculated to promote the dignity, or raiſe the utility, of the ſeminary. He has little to do, indeed, with the internal government of the body, for which a variety of officers in different departments are appointed; but in all public affairs he is, as it were, the mouth of the whole; putting their deliberations into proper form, and communicating or publiſhing them, according to the intention of the univerſity. Thus, if the whole univerſity, or a committee appointed by them, by ſtatute, or by the will of any particular benefactor, have, after a comparative trial, adjudged a prize to any perſon or perſons, it is the buſineſs of the public orator to inform the ſucceſsful parties of the iſſue of the trial. Again, if for ſingular learning, or for any remarkable *good will* ſhown to the univerſity by any perſon or perſons, the *ſenate* or *convocation* are pleaſed to declare their grateful ſenſe of it, either by conferring degrees, or otherwiſe as they think fit, the public orator is to notify this intention to the perſon or perſons concerned; and ſo in other caſes. Another part of the public orator's buſineſs is to preſent young noblemen, or thoſe who take *honorary* degrees, *tanquam nobiles*, to the vice-chancellor: this he does in a Latin ſpeech, which, according to circumſtances, is either ſhort or long; and of which the ſubject is generally a defence of that particular ſtatute which allows the ſons of noblemen, and ſome few others, to proceed to degrees before what is called the *ſtatutable time*. In doing this, encomiums, often ſtronger than juſt, are made upon the learning and virtue of the noble candidate; a view is taken of the dignity of his ancient houſe; the honour is mentioned which has accrued to the univerſity from the acceſſion of ſuch a member; and the oration concludes with promiſing great credit from his future conduct, as well as benefit from the influence of his rank in the ſtate. Theſe circumſtances are deemed ſufficient grounds for exempting the ſons of noblemen from that tedious courſe of ſtudy through which the ſons of commoners muſt all paſs before they be thought worthy of academical honours.

ORATORIANS, an order of prieſts, ſo called from the ORATORY, in which they met to pray.

* ORATORICAL. *adj.* [from *orator*.] Rhetorical; befitting an orator.—Where he ſpeaks in an *oratorical* affecting, or perſuaſive way, let this be explained by other places where he treats of the ſame theme in a doctrinal way. *Watts.*

ORATORIO, *n. ſ.* in the Italian muſic, a ſort of ſacred drama of dialogues; containing recitativos, duettos, trios, ritornellos, choruſes, &c. The ſubjects of thoſe pieces are uſually taken from ſcripture, or the life of ſome ſaint, &c. The muſic for the oratorios ſhould be in the fineſt taſte and beſt choſen ſtrains. Oratorios are greatly uſed at Rome in the time of Lent, and of late in England. Meneſtrier attributes the origin of oratorios to the cruſades, and ſays that the pilgrims returning from Jeruſalem and the Holy Land, &c. compoſed ſongs, reciting the life and death of the Son of God, and the myſteries of the

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the Chriſtian faith, and celebrating the achievements and conſtancy of ſaints and martyrs. Others, with more probability, obſerve, that the oratorio was an avowed imitation of the opera, with only this difference, that the foundation of it was always ſome religious or moral ſubject. Creſcimbeni aſcribes its origin to St Philip Neri, who, in his chapel, after ſermons, in order to allure young people to pious offices, had hymns and pſalms, ſung by one or more voices. (See NERI, N° 2.) Among theſe ſpiritual ſongs were dialogues; and theſe entertainments, improving every year, gave riſe in the 17th century to oratorios, ſo called from the place of their origin. See *Hawkins's Hiſtory of Muſic*. See alſo MUSIC, § 78.

ORATORY.

DEFINITIONS.

1. ORATORY, is thus defined by Dr Johnſon:

2. * ORATORY. *n. ſ.* [*oratoria ars*, Lat.] 1. Eloquence; rhetorical expreſſion.—Each paſture ſtored with ſheep feeding with ſober ſecurity, while the pretty lambs with bleating *oratory* craved the dams comfort. *Sidney.*—

When a world of men
Could not prevail with all their *oratory*,
Yet hath a woman's kindneſs over-rul'd. *Shak.*

When my *oratory* grew tow'rd end,
I bid them that did love their country's good,
Cry, God ſave Richard! *Shak. Rich. III.*

Sighs now breath'd
Unutterable, which the ſpirit of pray'r
Inſpir'd, and wing'd for heav'n with ſpeedier flight
Than loudeſt *oratory*. *Milt. Par. Loſt.*

—By this kind of *oratory*, and profeſſing to decline their own inclinations and wiſhes, they prevailed over thoſe who were ſtill ſurpriſed. *Clarendon.*—Hammond's ſubjects were ſuch as had greateſt influence on practice, which he preſt with moſt affectionate tenderneſs, making tears part of his *oratory*. *Fell.*—The former laid the greateſt weight of his *oratory* upon the ſtrength of his arguments. *Swift.*—

Come harmleſs characters, that no one hit,
Come Henley's *oratory*, Oſborn's wit. *Pope.*

2. Exerciſe of eloquence.—The Romans had ſeized upon the fleet of the Antiates, among which there were ſix armed with roſtra, with which the conſul Menenius adorned the public place of *oratory*. *Arb.* 3. [*Oratoire*, French.] *Oratory* ſignifies a private place, which is deputed and allotted for prayer alone, and not for the general celebration of divine ſervice. *Ayliffe's Parergon.*—They began to erect to themſelves *oratories*. *Hooker.*—Do not omit thy prayers for want of a good *oratory* or place to pray in. *Taylor's Guide.*

3. ORATORY is defined by others, the art of ſpeaking well upon any ſubject, in order to perſuade.

4. The terms RHETORIC and ORATORY, having no other difference but that one is taken from the Greek language, and the other from the Latin, may be uſed ſynonimouſly, but the caſe is not the ſame with reſpect to the words RHETORICIAN and ORATOR. For although the Grecians uſed the former, both to expreſs thoſe who taught the art, and thoſe who practiſed it, yet the Romans afterward, when they took that word into their language, confined it to the teachers of the art, and called the reſt *orators*. And there ſeems to have been a ſufficient reaſon for this diſtinction ſince the art was the ſame in both, and might therefore go by either name: but the different province of rhetoricians and orators made it not improper that they ſhould be called by different names. Beſides, anciently, before rhetoric was made a ſeparate and diſtinct art from philoſophy, the ſame perſons taught both. And then they were called not only *rhetoricians* but SOPHISTS. But becauſe they often employed their art rather to vindicate what was falſe and unjuſt, than to ſupport truth and virtue; this diſingenuous conduct, by which they frequently impoſed upon weak minds, brought a diſcredit both upon themſelves and their profeſſion. And therefore the word *ſophiſt*, or *ſophiſter*, has been more generally uſed in an ill ſenſe, to ſignify one ſkilled rather in the arts of cavilling, than qualified to ſpeak well and accurately upon any ſubject.

HISTORY *of* ORATORY.

5. THE invention of oratory is by the Egyptians and the fables of the poets aſcribed to Mercury. QUINTILIAN ſays, reſpecting the *origin* of this art. "The faculty of ſpeech we derive from nature; but the art from obſervation." But no certain account can be given when, or by whom, this art firſt began to be cultivated. Ariſtotle ſuppoſes that the firſt lineaments of it were very rude and imperfect. Pauſanias, in his *Deſcription of Greece*, tells us, that PITTHEUS, the uncle of Theſeus, taught it at Trezene, in Peloponneſus, and wrote a book concerning it, about 1000 years before Pauſanias, who flouriſhed under Adrian. And we learn from Homer, that the art was very early in high eſteem among the Greeks, as that poet greatly celebrates NESTOR and ULYSSES for their eloquence.

6. QUINTILIAN ſays, that afterwards EMPEDOCLES is the firſt upon record who attempted any thing concerning it. And he, by Sir Iſaac Newton's account, flouriſhed about 500 years after Troy was taken. Quintilian alſo tells us, that, 'the oldeſt writers upon this art are Corax and Tiſias, both of Sicily. After them came Gorgias of Leontium in the ſame iſland, who is ſaid to have been the ſcholar of Empedocles, and by reaſon of his great age (for he lived to be 109 years old) had many contemporaries. Thraſymachus of Chalcedon, Prodicus of Cea, Protagoras of Abdera, Hippias of Elis, and Alcidamus of Elea, lived in his time; as alſo Antiphon, who firſt wrote orations as well as a treatiſe on the art, and is ſaid to have ſpoken admirably well in his own defence; and beſides theſe

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theſe, Polycrates, and Theodore of Byzantium.' Corax and Tiſias gave rules for methodizing a diſcourſe, and adjuſting its particular parts. Cicero ſays, "Though ſome had ſpoke well before their time, yet none with order and method." But Gorgias ſeems to have excelled all the reſt in reputation; for a golden ſtatue was erected to him at Delphos, an honour conferred upon him only; and he is ſaid to have been ſo great a maſter of oratory, that in a public aſſembly he would undertake to declaim immediately upon any ſubject propoſed to him. He wrote, as Cicero informs us, in the demonſtrative or laudatory way; which requires moſt of the ſublime, and makes what Diodorus Siculus ſays of him the more probable, that "he firſt introduced the ſtrongeſt figures, members of periods oppoſite in ſenſe, of an equal length, or ending with a like ſound, and other ornaments of that nature." And hence thoſe figures which give the greateſt force and luſtre to a diſcourſe were anciently called by his name. Cicero tells us further, that Thraſymachus and Gorgias were the firſt who introduced numbers into proſe, which Iſocrates afterwards brought to perfection. Quintilian likewiſe mentions Protagoras, Gorgias, Prodicus, and Thraſymachus, as the firſt who treated of common places, and ſhowed the uſe of them.

7. Plato wrote an elegant dialogue upon this ſubject, which is ſtill extant, entitled *Gorgias*.

8. But Isocrates was the moſt renowned of all Gorgias's ſcholars. Cicero extols him with the higheſt commendations, as the greateſt maſter and teacher of oratory; "whoſe ſchool, like the Trojan horſe, ſent forth many great men." Ariſtotle was chiefly induced to engage in this province from an emulation of his glory. Quintilian ſays they both wrote upon the art, though there is no ſyſtem of the former extant. But that of Ariſtotle is eſteemed the beſt and moſt complete of any in the Greek language.

9. In this age the Grecian eloquence appeared in its higheſt perfections. Demosthenes was a hearer both of Iſocrates and Plato, as alſo of Iſæus (ten of whoſe orations are yet extant); and by his ſurpriſing genius and indefatigable induſtry, made ſuch advantage of their precepts, that he has been always eſteemed by the beſt judges the prince of Grecian orators. His great adverſary and rival Æschines, after his baniſhment, is ſaid to have gone to Rhodes, and employed his time there in teaching rhetoric. Theodectes and Theophraſtus, both ſcholars of Ariſtotle, imitated their maſter in writing upon the art. And from that time the Greek philoſophers, eſpecially the ſtoics and peripatetics, applied themſelves to lay down the rules of oratory; which Socrates had before ſeparated from the province of a philoſopher.

10. There is preſerved a treatiſe upon this ſubject, which ſome aſcribe to Demetrius Phalereus, though others, more probably, to Dionysius of Halicarnaſſus. Quintilian mentions ſeveral other famous rhetoricians in the following ages, who were likewiſe writers; as Hermagoras, Athenæus, Apollonius, Molo, Areus Cæcilius, Dionyſius of Halicarnaſſus, Apollonius of Pergamus, and Theodore of Gadara. But of theſe nothing now remains upon the ſubject of oratory, except ſome tracts of Dionyſius, who flouriſhed in the reign of Auguſtus. But ſome eminent writers on this ſubject have appeared among the Greeks ſince the time of Quintilian, particularly Hermogenes, and Longinus, the author of the incomparable treatiſe *Of the Sublime*, a book which can ſcarce be too much commended, or too often read.

11. It was long before the Romans cultivated this art, and not without difficulty at firſt. The reaſon was, that for ſeveral ages they were wholly addicted to military affairs. Therefore, ſo late as A. U. C. 592, when by the induſtry of ſome Grecians, the liberal arts began to flouriſh in Italy, a decree paſſed the ſenate, by which all philoſophers and rhetoricians were ordered to depart out of Rome. But in a few years after, when Carneades, Critolaus, and Diogenes, who were not only philoſophers but orators, came ambaſſadors from Athens to Rome, the Roman youth were ſo charmed with the eloquence of their harangues, that they could no longer be ſtopt from purſuing the ſtudy of oratory. And by a further acquaintance with the Greeks, it ſoon came into ſuch eſteem, that perſons of the firſt quality employed their time and pains to acquire it.

12. Seneca tells us, that Lucius Plotius, a Gaul, was the firſt who taught the art of oratory at Rome in Latin; which, Cicero ſays, was while he was a boy; Seneca adds, that this profeſſion continued for ſome time in the hands of freed men; and that the firſt Roman who engaged in it was Blandus, of the equeſtrian order, who was ſucceeded by others; ſome of whoſe lives are extant, written by Suetonius, as many of the Grecians are by Philoſtratus and Eunapius. Quintilian likewiſe gives us the names of thoſe Romans who wrote upon the art. "The firſt (ſays he), who compoſed any thing upon this argument, was M. Cato the cenſor. After him Antony the orator began upon the ſubject, which is the only work he has left, and that imperfect. Then followed ſome of leſs note. But he who carried eloquence to its higheſt pitch among us, was Cicero; who has likewiſe by his rules, given the beſt plan both to practice and teach the art.

13. Cornificius wrote largely upon the ſame ſubject; Sulpitius, and Gallio the father, each of them ſomething. But Celsus and Lenas were more accurate than Gallio: and in our times Virginius, Pliny, and Rutilius." Time has deprived us of moſt of the writers mentioned by Quintilian. But we have the leſs reaſon to regret this ſubject. Beſides his *Two Books of Invention*, which Quintilian here calls his *Books of Rhetoric*, there are extant his *Three Books of an Orator*; one *Of famous Orators*; and another, entitled *The Orator*; alſo his *Topics*, a preface *Concerning the beſt ſort of Orators*, and a treatiſe *Of the parts of Oratory*. Each of theſe treatiſes, whether we regard the juſtneſs and delicacy of the thoughts, the uſefulneſs of the rules, or the elegance and beauty of the ſtyle, deſerves to be frequently peruſed by all lovers of eloquence. But the *Four books to Herennius*, which are publiſhed among Cicero's works, ſeem with good reaſon to be attributed to Cornificius.

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14. Celſus is alſo ſaid to have taught oratory, whom Quintilian places among the beſt rhetoricians, and whoſe *Eight Books of Medicine* are yet extant, written in ſo beautiful a ſtyle as plainly ſhows him a maſter of eloquence. But Quintilian himſelf excelled all who went before him in diligence and accuracy as a writer. His *Inſtitutions* are ſo comprehenſive, and written with ſuch exactneſs and judgment, that they are generally allowed to be the moſt perfect work of the kind.

15. There were ſome other orators in the following ages, whoſe works are yet extant; but as they contain nothing of moment, it is unneceſſary to enumerate them. The Abp. of Cambray gives it as his opinion, that the method of forming the beſt ſyſtem of oratory, is to collect it from the fineſt precepts of Ariſtotle, Cicero, Quintilian, Longinus, and other celebrated authors of antiquity.

INTRODUCTION.

OBJECTS OF ORATORY.

16. The buſineſs of oratory is to teach us to ſpeak well; which, as CICERO explains it, is to ſpeak *juſtly*, *methodically*, *floridly*, and *copiouſly*.

17. To ſpeak *juſtly*, a man muſt be able to ſay all that is proper, and to avoid whatever is trifling.

18. To ſpeak *methodically*, the orator muſt arrange all the parts of his diſcourſe in their proper order.

19. To ſpeak *floridly*, is ſo peculiar a property of this art, that ſome have wholly confined it to the pomp and ornaments of language. But true eloquence requires not only the beauties and flowers of language, but likewiſe the beſt ſenſe and cleareſt reaſoning. Beſides, rhetoric gives rules for the ſeveral ſorts of ſtyle, and directs the uſe of them agreeably to the nature of the ſubject.

20. But the force of oratory appears in nothing more than a *copiouſneſs* of expreſſion, or a proper manner of enlargement, ſuited to the nature of the ſubject; which is of great uſe in perſuaſion, and forms the laſt property required by Cicero of ſpeaking well. A ſhort and conciſe account of things is often attended with obſcurity, from an omiſſion of ſome neceſſary circumſtances relating to them, and is incapable of exciting the attention of the hearer. But where the images of things are drawn in their full proportion, painted in their proper colours, ſet in a clear light, and repreſented in different views, with all the ſtrength and beauties of eloquence, they captivate the minds of the audience with the higheſt pleaſure, engage their attention, and, by an irreſiſtible force, bend them to the opinion of the ſpeaker.

21. While the orator employs his art in purſuing only thoſe ends for which it was at firſt deſigned, the perſuading men to good and virtuous actions, and diſſuading them from every thing that is ill and vicious; nothing can be more commendable in itſelf, or uſeful to human ſocieties. But the beſt things may be abuſed.

DIVISIONS *of* ORATORY.

22. ORATORY conſiſts of four parts; *invention*, *diſpoſition*, *elocution*, and *pronunciation*. Every one who aims to ſpeak well and accurately upon any ſubject, purſues ſuch thoughts as ſeem moſt proper to explain and illuſtrate the thing upon which he deſigns to diſcourſe. And if the nature of it requires that he ſhould bring reaſons to confirm what he ſays, he not only ſeeks the ſtrongeſt, and ſuch as are like to be beſt received; but prepares to anſwer any objection which may be offered to the contrary. This is *invention*.—After this he conſiders how he can beſt arrange thoſe arguments which have occurred to his mind, that they may appear in the plaineſt light, and not loſe their force by diſorder and confuſion. This is *diſpoſition*. His next care is to give his thoughts an agreeable dreſs; by ſelecting the moſt proper words, cleareſt expreſſions, ſmooth and harmonious periods, with other ornaments of ſtyle, as may beſt ſuit the nature of his ſubject, brighten his diſcourſe, and render it moſt entertaining to his hearers. This is *elocution*.—The laſt thing is, to deliver what he has thus compoſed with a juſt and agreeable *pronunciation*. And daily experience convinces us, how much this contributes both to engage the attention, and impreſs what is ſpoken upon the mind of the hearers.

PART I.

OF INVENTION.

SECT. I. *Of* INVENTION *in general; and particularly of* COMMON PLACES, *and the* STATE *of a* CAUSE.

23. INVENTION, in general, is the diſcovery of ſuch things as are proper to perſuade. To attain this end, the orator propoſes three things: 1. To prove or illuſtrate the ſubject upon which he treats; 2. To conciliate the minds of his hearers, and to engage their paſſions in his favour; and 3. As theſe require different kinds of arguments or motives, invention furniſhes him with a ſupply for each of them.

24. An argument, as defined by Cicero, is a reaſon which induces us to believe what before we doubted of. And as different kinds of diſcourſes require different arguments, rhetoricians have conſidered them two ways; in general, under certain heads, as a common fund for all ſubjects; and, in a more particular manner, as they are ſuited to *demonſtrative*, *deliberative*, or *judicial* diſcourſes.

25. Great learning and extenſive knowledge are noble funds for invention. An orator therefore ſhould be furniſhed with a ſtock of important truths, ſolid maxims, and a variety of knowledge, collected both from obſervation and acquaintance with the liberal arts; that he may not only be able to expreſs himſelf in the moſt agreeable manner, but likewiſe to ſupport what he ſays with the ſtrongeſt and cleareſt arguments.

26. But as all are not born with a like happy genius, and have not the ſame opportunity to cultivate their minds with learning and knowledge; art has preſcribed a method to leſſen, in ſome meaſure, theſe difficulties, and help every one to a ſupply of arguments upon any ſubject. And this is done by *common places*, which CICERO calls the *ſeats* or *heads of arguments*, and, by a name from

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from the Greek, TOPICS. They are of two ſorts, *internal* and *external*.

27. I. *Internal topics* ariſe from the ſubject upon which the orator treats; and are therefore diſtinguiſhed from *external*, which he fetches from without, and applies to his purpoſe. Cicero and Quintilian make them ſixteen; of which three comprehend the whole thing they are brought to prove, namely, *definition*, *enumeration*, and *notation*; of the remaining 13, ſome contain a part of it, and the reſt its various properties and circumſtances, with other conſiderations relating to it; and theſe are, *genus*, *ſpecies*, *antecedents*, *conſequents*, *adjuncts*, *conjugates*, *cauſe*, *effect*, *contraries*, *oppoſites*, *ſimilitude*, *diſſimilitude*, and *compariſon*.

28. *Definition* explains the nature of the thing defined, and ſhows what it is. *Enumeration* takes in all the parts of a thing. And from this we prove, that what agrees to all the parts agrees to the whole. *Notation*, or etymology, explains the meaning or ſignification of a word. *Genus* contains under it two or more ſpecies of things, differing in nature. *Species* is that which comprehends under it all the individuals of the ſame nature. *Antecedents* are ſuch things, as, being once allowed, others neceſſarily, or very probably, follow. *Conſequents* are ſuch things as, being allowed, neceſſarily or very probably infer their antecedents. *Adjuncts* are ſeparable properties of things, or circumſtances that attend them. Theſe are very numerous, and afford a great variety of arguments. They do not neceſſarily infer their ſubject; but, if fitly choſen, render a thing credible, and are a good ground for aſſent. *Conjugates* are words deduced from the ſame origin with that of our ſubject. By theſe the habit is proved from its acts. A *cauſe* is that by the force of which a thing does exiſt. There are four kinds of cauſes, *matter*, *form*, *efficient*, and *end*, which afford a great variety of arguments. The way of reaſoning from them is to infer the effect from the cauſe. An *effect* is that which ariſes from a cauſe, therefore the cauſe is proved by it. *Contraries* are things, which, under the ſame genus, are at the utmoſt diſtance from each other; ſo that, what we grant to the one we deny the other. *Oppoſites* are things, which, though repugnant to each other, yet are not directly contradictory: as, To love and to injure, to hate and to commend. They differ from contraries in this, that they do not abſolutely exclude one another. *Similitude* is an agreement of things in quality. *Diſſimilitude* is a diſagreement of things in quality. Compariſon is made three ways; for either a thing is compared with a greater, with a leſs, or with its equal. This, therefore, differs from ſimilitude on this account, that the quality was conſidered in that, but here the quantity.

29. From this account of common places, as laid down by the orators of ancient Greece and Rome, it is eaſy to conceive what a large field of diſcourſe they open to the mind upon every ſubject. "One who had no other aim (ſays Dr BLAIR) but to talk copiouſly and plauſibly, by conſulting them on every ſubject, and laying hold of all that they ſuggeſted, might diſcourſe without end; and that too, though he had only the moſt ſuperficial knowledge of his ſubject. But ſuch diſcourſe could be no other than trivial. What is truly ſolid and perſuaſive muſt be drawn from a thorough knowledge of the ſubject, and profound meditation on it. They who would direct ſtudents of oratory to any other ſources of argumentation, only delude them; and by attempting to render rhetoric too perfect: art, they render it, in truth, a trifling and childiſh ſtudy."

30. II. *External topics* are all taken from authorities, and have one general name, *Teſtimonies*.

31. All teſtimonies may be diſtinguiſhed into two ſorts, divine and human. A divine teſtimony, when certainly known to be ſuch, is inconteſtable, and admits of no debate. Human teſtimonies, conſidered as furniſhing the orator with arguments, may be reduced to three heads; WRITINGS, WITNESSES, and CONTRACTS. (See theſe articles.)

32. The occaſion of diſpute reſpecting written teſtimonies, which may afford the orator an opportunity of diſplaying his abilities may ariſe from five circumſtances; viz. *Ambiguity*, *Diſagreement* between *words* and *intention*, *Contrariety*, *Reaſoning*, and *Interpretation*. Of theſe it would be ſuperfluous to give examples.

33. III. *Of the* STATE *of a* CONTROVERSY. The ancients, obſerving that the principal queſtion or point of diſpute in all controverſies might be referred to ſome particular head, reduced thoſe heads to a certain number, that both the nature of the queſtion might thus be better known, and the arguments ſuited to it be diſcovered with greater eaſe. And theſe heads they call *ſtates*.

34. The number of theſe ſtates, both Cicero and Quintilian reduce to three; and tell us, that three things may be inquired into in all diſputes: *Whether* a thing is? *what* it is? and *how* it is?

SECT. II. *Of* ARGUMENTS *ſuited to* DEMONSTRATIVE DISCOURSES.

35. THESE conſiſt either in praiſe or diſpraiſe; and, agreeably to the nature of all contraries, one of them will ſerve to illuſtrate the other. Either perſons or things may be the ſubjects of praiſe.

36. I. In praiſing or diſpraiſing *perſons*, rhetoricians preſcribe two methods: 1. To follow the order in which every thing happened that is mentioned in the diſcourſe: 2. To reduce what is ſaid under certain general heads, without a ſtrict regard to the order of time.

37. i. In purſuing the former method, the diſcourſe may be very conveniently divided into three periods. The firſt of which will contain what preceded the perſon's birth; the ſecond, the whole courſe of his life; and the third, what followed upon his death.

38. ii. The other method is to reduce the diſcourſe to certain general heads, without regarding the order of time. As if any one, in praiſing the elder Cato, ſhould propoſe to do it, by ſhowing that he was a moſt prudent ſenator, an excellent orator, and moſt valiant general.

39. II. In praiſing *things*, all beings inferior to man may be proper ſubjects for praiſe or diſpraiſe; whether animate or inanimate; whether ideal or real; as virtues, vices, countries, cities, &c. But what chiefly claim the attention of the orator, as ſubjects of praiſe or diſpraiſe, are the actions of men.

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SECT. III. *Of* ARGUMENTS *suited to* DELIBERATIVE DISCOURSES.

40. THIS kind of discourses must have been very ancient; since, doubtless, from the earliest period of men conversing together, they deliberated upon their common interest, and offered their advice to each other. But neither those of the laudatory nor judicial kind could be introduced till mankind were settled in communities. The early practice of suasory discourses appears from sacred writ, where we find, that when MOSES was ordered upon an embassy into Egypt, he would have excused himself for want of eloquence. And Homer represents the Greeks at the siege of Troy, as anxiously running to hear their generals harangue them. Nor is this part of oratory less conspicuous for its usefulness to mankind than for its antiquity; being highly beneficial either in councils, camps, or any societies of men. How many instances have we upon record, where the fury of an enraged multitude has been checked and appeased by the prudent and artful persuasion of some particular person? The story of Menenius Agrippa, who pacified the commons of Rome, when they withdrew from the senators, and retired out of the city, by his fable of the Belly deserted by the other members, is well known. And how often have armies been fired to the most dangerous exploits, or recalled to their duty, when ready to mutiny, by a moving speech of their general?

41. The principal heads of arguments, proper for advice, are these taken from the nature of the thing under consideration.

42. (1.) *Pleasure* often affords a very cogent argument in discourses of this nature.

43. (2.) *Profit*, or advantage, has no less influence upon mankind than the former; and when it respects things truly valuable, it is a very just and laudable motive.

44. (3.) *Honour*, than which no argument will sooner prevail with generous minds, or inspire them with greater ardour.

45. But although a thing considered in itself appear beneficial if it could be attained, yet the *expediency* of undertaking it may still be questionable: in which case the following heads, taken from the circumstances which attend it, will afford proper arguments to engage in it.

46. (1.) The *possibility* of succeeding may sometimes be argued as one motive to this end.

47. (2.) But an argument founded upon *probability* will be much more likely to prevail.

48 (3.) But as even probability is not a motive strong enough with many persons to engage in the prosecution of a thing which is attended with considerable difficulties, it is often necessary to represent the *facility* of doing it, as an additional reason.

49. (4.) If the thing advised can be shown to be in any respect *necessary*, this will render the motive still much stronger for undertaking it.

50. (5.) To these heads may be added the consideration of the *event*, which in some cases carries great weight with it. As when we advise to the doing of a thing from this motive, That whether it succeed or not, it will yet be of service to undertake it.

51. These are the principal heads which furnish the orator with proper arguments in giving advice. But no small skill and address are required in giving it. For since the tempers and sentiments of mankind, as well as their circumstances, are very various; it is often necessary to accommodate the discourse to their opinions and prejudices. And therefore the weightiest arguments are not always the most proper and fittest to be used on all occasions. Cicero, in treating upon this subject, distinguishes mankind into two sorts; the ignorant, who always prefer profit to honour; and such as are civilized, who prefer honour and reputation.

SECT. IV. *Of* ARGUMENTS *suited to* JUDICIAL DISCOURSES.

52. IN *judicial* controversies there are two parties; the plaintiff or prosecutor, and the defendant or person charged. The subject is always something past, and the ends proposed by them Cicero calls *equity* or *right*; the former of which arises from the laws of the country, and the latter from reason and the nature of things.

53. All judicial causes are either *private* or *public*. *Private causes*, or *civil causes*, relate to the right of particular persons. *Public* causes are those which relate to public justice and the government of the state; which are also called *criminal*, because by them crimes are prosecuted, whether capital, or of a less heinous nature. We need only take the heads of the arguments from this last kind, because they are more copious, and easy to be illustrated; whence such as agree to the former will sufficiently appear.

54. (1.) The *conjectural* state. When the accused person denies the fact, there are three things which the prosecutor has to consider; whether he *would* have done it, whether he *could*, and whether he *did* it. And hence arise three topics; from the *will*, the *power*, and the *signs* or circumstances which attended the action. The affections of the mind discover the *will*; as passion, an old grudge, a desire of revenge, a resentment of an injury, and the like. The second head is the *power* of doing a thing; and there are three things which relate to this, the *place*, the *time*, and *opportunity*. The third head comprehends the *signs* and circumstances which either preceded, accompanied, or followed, the commission of the fact. So threats, or the accused person being seen at or near the place before the fact was committed, are circumstances that may probably precede murder; fighting, crying out, bloodshed, are such as accompany it; paleness, trembling, inconsistent answers, hesitation, or faltering of the speech, something found upon the person accused which belonged to the deceased, are such as follow it.

55. These are the topics from which the prosecutor takes his arguments. The business of the defendant is to invalidate these. Therefore such as are brought from the *will*, he either endeavours to show are not true, or so weak as to merit very little regard. And he refutes those taken from the *power*, by proving that he wanted either opportunity or ability; as, if he can show, that neither the place nor time insisted on was at all proper; or that he was then in another place. In like manner he will endeavour to confute the *circumstances*, if they cannot be directly denied, by showing

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showing that they are not such as necessarily accompany the fact, but might have proceeded from other causes, though nothing of what is alleged had been committed; and it will be of great service to assign some other probable cause. See CRIME, JURY, MANSLAUGHTER, MURDER, TRIAL, &c.

56. (2.) The *definitive* state, which is principally concerned in defining and fixing the name proper to the fact; though orators seldom use exact definitions, but commonly choose larger descriptions, taken from various properties of the subject or thing described. The heads of argument in this state are much the same to both parties. For each of them defines the fact his own way, and endeavours to refute the other's definition.

57. (3.) The third state is that of *quality*, in which the dispute turns upon the justice of an action. And here the defendant does not deny he did the thing he is charged with; but asserts it to be right and equitable, from the circumstances of the case, and the motives which induced him to it.

58. (4.) Lastly, a fact is sometimes rather excused than defended, by pleading that it was not done designedly, or with any ill intent. This is called *concession*; and consists of two parts, *apology* and *intreaty*. The former represents the matter as the effect of inadvertency, chance, or necessity.

SECT. V. *Of the* CHARACTER *and* ADDRESS *of an* ORATOR.

59. HAVING considered and explained the first part of invention, which furnishes the orator with such arguments as are necessary for the proof of his subject, we are next to show what are the proper means to conciliate the minds of his hearers, to gain their affection, and to recommend both himself and what he says to their good opinion and esteem. This is by Quintilian called *propriety of manners*. And he adds, it is necessary, "that every thing appear easy and natural, and the disposition of the speaker be discovered by his words."

60. There are four qualities suited to the character of an orator, which should appear in his discourses, to render what he says acceptable to his hearers; and these are, *wisdom*, *integrity*, *benevolence*, and *modesty*.

61. It is the orator's business to consider the various characters and circumstances of life, with the different bias and way of thinking they give to the mind; that he may so conduct himself in his behaviour and manner of speaking as will render him most acceptable, and gain him the good esteem of those whom he addresses.

SECT. VI. *Of the* PASSIONS.

62. As it is often highly necessary for the orator, so it requires his greatest skill, to engage the passions in his interest. Where persons will neither be convinced by reason, nor moved by the authority of the speaker, the only way left to put them upon action, is to engage their passions.

63. The passions may be separately referred, either to *demonstrative*, *deliberative*, or *judicial* discourses; though they are not confined to any of them.

64. i. To the *demonstrative* kind we may refer *joy* and *sorrow*, *love* and *hatred*, *emulation* and *contempt*.

65. ii. To *deliberative* discourses may be referred *fear*, *hope*, and *shame*.

66. iii. To *judicial* discourses may be referred *anger* and *lenity*, *pity* and *indignation*.

67. These are the passions with which an orator is principally concerned. In addressing which, not only the greatest warmth and force of expression is often necessary, but he must likewise first endeavour to impress his own mind with the same passion he would excite in others. A man may convince, and even persuade others to act, by mere reason and argument. But that degree of eloquence which gains the admiration of mankind, and properly denominates one an orator, is never found without warmth or passion. Passion, when in such a degree as to rouse and kindle the mind, without throwing it out of the possession of itself, is universally found to exalt all the human powers. It renders the mind more enlightened, penetrating, vigorous, and masterly, than it is in its calm moments. A man actuated by a strong passion becomes much greater than he is at other times. He is at no loss for words and arguments. He transmits to others, by a sort of contagious sympathy, the warm sentiments which he feels; his looks and gestures are all persuasive; and nature here shows herself infinitely more powerful than art.

PART II.

OF DISPOSITION.

98. AS *Invention* supplies the orator with necessary materials, so *Disposition* directs him how to place them in the most proper order. What is here chiefly intended by it is, the placing the several parts of a discourse in a just method and dependence upon one another.

69. Writers are not all agreed in determining the parts of an oration: though the difference is rather in the manner of considering them than in the things themselves. Cicero mentions six, viz. *Introduction*, *Narration*, *Proposition*, *Confirmation*, *Confutation*, and *Conclusion*.

SECT. I. *Of the* INTRODUCTION.

70. THE design of the introduction is to prepare the minds of the hearers for a suitable reception of what is to follow. For this end, three things are requisite; that the orator gain the *good opinion* of his hearers, that he secure their *attention*, and give them some *general notion* of his subject.

71. (1.) To ensure the *good opinion* of those to whom the discourse is made, it is not unusual to commend them for their virtues, and those especially which have a more immediate relation to the present subject. Sometimes the orator expresses his gratitude for past favours; at other times he declares his concern for them and their interest.

72. (2.) As to *Attention*, Cicero says, "We shall be heard attentively on one of these three things; if we propose what is *great*, *necessary*, or for the *interest* of those to whom the discourse is addressed."

73. (3.) Some *general account* of the subject of the discourse is always necessary. For every one expects to be soon informed of the design of the speaker, and what he proposes to treat of.

74. These are the heads which commonly furnish

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nish matter for this part of a discourse. In some cases, orators have recourse to a more artful way of opening their subject, endeavour to remove jealousies, apologize for what they are about to say, and seem to refer it to the candour of the hearers to judge of it as they please. This is called *insinuation*; and may be necessary, where a cause is in itself doubtful, or may be thought so from the prejudices of the hearers, or the impressions already made upon them by the contrary side. An honest man would not knowingly engage in a bad cause; and yet, through prevailing prejudice, that may be so esteemed which is not so in itself. In these cases great prudence is necessary to give such a turn to things, as may be least liable to offence.

Sect. II. *Of* Narration.

75. The orator having prepared his hearers to receive his discourse with candour, and acquainted them with his general design, before he proceeds directly to his subject, often finds it necessary to give some account of what preceded, accompanied, or followed upon it. And this he does to enlarge the view of the particular point in dispute, and place it in a clearer light. This is called *narration*; which is a recital of something done, in the order and manner in which it was done.

76. Those things which properly enter into a narration, are the cause, manner, time, place, and consequences of an action; with the temper, fortune, views, ability, associates, and other circumstances of those concerned in it. In relating a fact, the orator describes it in so strong and lively a manner, as may give the greatest evidence to his hearers, and make the deepest impression upon their minds. See Narration, § 3.

77. There are 4 properties required in a good narration; that it be *short*, *perspicuous*, *probable*, and *interesting*.

Sect. III. *Of the* Proposition.

78. In every regular discourse, the speaker's intention is to prove or illustrate something. And when he lays down his subject in a distinct and express manner, this is called the *proposition*.

79. Orators use several ways in laying down the subject of their discourses. Sometimes they do it in one general proposition. At other times, to give a clearer and more distinct view of their discourse, they subjoin to the proposition the general heads of argument by which they endeavour to support it.

80. But when the subject relates to several different things, which require to be separately laid down in distinct propositions, it is called a partition. Some have made two kinds of *partition*, one called *separation*, and the other *enumeration*. By the former, the orator shows in what he agrees with his adversary, and wherein he differs from him. By the latter he acquaints his hearers with the several parts of his discourse upon which he designs to treat. And this alone, properly speaking, is a *partition*.

81. There are three things requisite in a good partition; that it be *short*, *complete*, and consist but of a *few members*.

82. (1.) A partition is said to be *short*, when each proposition contains in it nothing more than is necessary. So that the brevity here required is different from that of a narration; for that consists chiefly in things, this in words.

83. (2.) It ought to be *complete* and perfect. And for this end, care must be taken to omit no necessary part in the enumeration.

84. (3.) There should be as *few heads* as is consistent with the nature of the subject. The ancient rhetoricians prescribe 3 or 4 at the most. And Cicero never exceeds that number. Yet it is sometimes convenient to subdivide these again, into several parts. This subdividing, however, should never have place but when it is absolutely necessary. To split a subject into many minute parts, has always a bad effect in speaking. It makes an oration appear dry, and unnecessarily fatigues the memory. In a sermon, there may be from 3 to 5 or 6 heads, including subdivisions; seldom more.

85. A just partition is attended with considerable advantages. It gives both light and ornament to a discourse. In a sermon, or a pleading at the bar, few things are of greater consequence than a proper division. It should be studied with much care; for if one take a wrong method at first setting out, it will lead them astray in all that follows, and render the whole discourse either perplexed or languid.

Sect. IV. *Of* Confirmation.

86. The orator having acquainted his hearers, in the proposition, with the subject on which he designs to discourse, usually proceeds either to prove or illustrate what he has laid down. Some discourses require nothing more than an illustration, to set them in a proper light, for which reason, they have often no distinct proposition. But where arguments are brought in defence of the subject, this is properly *confirmation*. Cicero defines, "confirmation, that which gives proof, authority, and support to a cause, by reasoning." If any thing in the proposition seems obscure, or liable to be misunderstood, the orator first explains it, and then offers such arguments in proof of it, and represents them in such a light, as seem most proper to gain the assent of his hearers. Two methods of reasoning are employed by orators, the *synthetic* and *analytic*.

87. I. Every piece of synthetic reasoning may be resolved into a syllogism or series of syllogisms. (See Logic, *Part* III, *Sect.* IV.) As a logical syllogism consists of 3 parts or propositions, a rhetorical syllogism frequently contains 4 or 5. Cicero reckons this last the most complete. But all that is said in confirmation of either of the premises is accounted but as one part.

88. But orators do not often use complete syllogisms, but most commonly *enthymemes*. An enthymeme is an imperfect syllogism, consisting of two parts; the conclusion, and one of the premises: And in this kind of syllogism, that proposition is omitted, whether it be the major or minor, which is sufficiently manifest of itself, and may easily be supplied by the hearers. But the proposition that is expressed is usually called the *antecedent*, and the conclusion the *consequent*.

89. It is reckoned a beauty in enthymemes, when

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when they conſiſt of contrary parts: becauſe the turn of them is moſt acute and pungent. Such is that of Micipſa in Salluſt: "What ſtranger will be faithful to you who are an enemy to your friends?" Orators manage enthymemes in the ſame manner they do ſyllogiſms; that is, they invert the order of the parts, and confirm the propoſition by one or more reaſons: and therefore a rhetorical enthymeme frequently conſiſts of 3 parts, as a ſyllogiſm does of 5. Though, ſtrictly ſpeaking, a ſyllogiſm can conſiſt of no more than 3 parts, and an enthymeme but of two. See ENTHYMEME.

90. II. The other method of reaſoning is the *analytic*, in which the orator conceals his intention concerning the point he is to prove, till he has gradually brought his hearers to the deſigned concluſion. (See ANALYTIC.) They are led on, ſtep by ſtep, from one known truth to another, till the concluſion be ſtolen upon them, as the natural conſequence of a chain of propoſitions.

91 Under the analytic may be comprehended reaſoning by *example*. Rhetoricians uſe this word in a different ſenſe from the common acceptation. In oratory the word *example* is uſed for any kind of ſimilitude; or, as Voſſius defines it, "When one thing is inferred from another, by reaſon of the likeneſs which appears between them." Hence it is called an *imperfect induction*, which infers ſomething from ſeveral others of the like nature, and has always the greateſt force when the examples are taken from facts. But compariſons are ſometimes made between facts and other things, to infer ſome difference or *oppoſition* between them. In comparing two facts, on account of ſome diſagreement and unlikeneſs, the inference is made from the difference between one and the other in that particular reſpect only.

92. Thus we have given a brief account of the principal methods of reaſoning uſed by orators. As to the diſpoſition of arguments, or the order of placing them, ſome adviſe to put the weaker, which cannot wholly be omitted, in the middle: and ſuch as are ſtronger, partly in the beginning, to gain the eſteem of the hearers and render them more attentive; and partly at the end, becauſe what is laſt heard is likely to be retained longeſt: But if there are but two arguments, to place the ſtronger firſt, and then the weaker; and after that to return to the former, and inſiſt principally upon it. But this muſt be left to the prudence of the ſpeaker. Nor ought arguments to be crowded too cloſe upon one another; for that takes off from their force, and does not leave the hearers ſufficient time duly to conſider them.

SECT. V. *Of* CONFUTATION.

93. THE forms of reaſoning here are the ſame as have been explained under *confirmation*. *Confutation*, however, is often the more difficult taſk; becauſe he who is to prove a thing comes uſually prepared; but he who is to confute it is frequently left to a ſudden anſwer. Therefore, not only a good judgment, but a readineſs of thought is neceſſary. But, in all diſputes, it is of the greateſt conſequence to obſerve where the ſtreſs of the controverſy lies. In confutation, what the adverſary has advanced ought carefully to be conſidered, and in what manner he has expreſſed himſelf. Thoſe arguments that are foreign to the ſubject may in a very few words be ſhown to be inſignificant. There ought alſo to be a diſtinction made between ſuch things as relate to the ſubject, according to their importance. Thoſe that appear to have no great weight ſhould be ſlightly remarked; and are generally better turned off with an air of neglect, a pungent queſtion, or an agreeable jeſt, than confuted by a ſerious and laboured anſwer. But thoſe, which relate to the merits of the cauſe, may be confuted either by *contradicting* them, or by ſhewing ſome *miſtake* in the reaſoning, or their *invalidity* when granted.

94. Things may be *contradicted* ſeveral ways. What is apparently falſe may be expreſsly *denied*. And what the adverſary cannot prove, may likewiſe be denied. It is a handſome way of contradicting a thing, by ſhowing that the adverſary himſelf maintained the contrary. An adverſary is never more effectually ſilenced than when he is charged with contradictions; for this is ſtabbing him with his own weapon. Sometimes a thing is not in expreſs terms denied, but repreſented to be utterly incredible. And this method expoſes the adverſary more than a bare denial.

95. There is likewiſe an ironical way of contradicting a thing, by retorting that and other things of the like nature upon the adverſe party. Such an unexpected return is ſometimes of great ſervice to abate the confidence of an adverſary.

96. A nd method of confutation is, by obſerving ſome *flaw* in the reaſoning of the adverſe party. Syllogiſms may be refuted, either by ſhowing ſome miſtake in the premiſes, or that the concluſion is not juſtly deduced from them. Enthymemes may be refuted, either by ſhowing that the antecedent is falſe, or the conſequent not juſtly inferred from it. As to *induction* and *example*, by which the truth or equity of a thing is proved from its likeneſs to other things; the reaſoning is invalid, if the things ſo compared can be ſhown not to have that ſimilitude or agreement on which the inference is founded.

97. The laſt method of *confutation* is, when the orator does in ſome ſenſe *grant* the adverſary his argument, and at the ſame time ſhows its *invalidity*. This is done by a variety of ways, according to the nature of the ſubject. Sometimes he allows what was ſaid may be true; but pleads, that what he contends for is neceſſary. At other times he pleads, that although the contrary opinion may ſeem to be attended with advantage, yet that his own is more juſt or honourable. Such was the caſe of Regulus. (See REGULUS.) Another way of confutation is, by retorting upon the adverſary his own argument. The orator takes this advantage where an argument proves too much, that is, more than the perſon intended, who made uſe of it. *Inverſion* reſembles this, by which the orator ſhows, that the reaſons offered by the oppoſite party make for him. Sometimes the charge is acknowledged, but the crime ſhifted off to another. Another method is, to alleviate the charge, and take off the force of it, by ſhowing, that the thing was not done with that intention which the adverſary inſinuates.

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98. Such are the methods of confutation, uſed by orators, in anſwering arguments brought by the contrary party. But ſometimes they raiſe ſuch objections themſelves to what they have ſaid, as they imagine may be made by others; which they afterwards anſwer, the better to induce their hearers to think, that nothing conſiderable can be offered againſt what they have advanced, but what will admit of an eaſy reply. This is an effectual way of defeating an adverſary, when the objection is well ſtated, and clearly anſwered.

Sect. VI. *Of the* Conclusion.

99. Rhetoricians make the *concluſion* of a diſcourſe to conſiſt of two parts: *recapitulation* and *an addreſs to the paſſions*.

100. I. *Recapitulation*, is a ſummary account of what the ſpeaker has before offered in maintenance of his ſubject; and is deſigned both to refreſh the memory of the hearers, and to bring the principal arguments together into a narrow compaſs, that they may appear in a ſtronger light. There are ſeveral things neceſſary to a good recapitulation. 1. It muſt be ſhort and conciſe, as it is deſigned to refreſh the memory, and not to burden it. The chief things only are to be touched, on which the cauſe principally depends; the general heads of the diſcourſe, with the main arguments brought to ſupport them. 2. They ſhould be recited in the ſame order in which they were at firſt laid down. The hearers will thus be enabled better to keep pace with the ſpeaker as he goes along. Every thing ought to be repreſented in the ſtrongeſt terms, and in ſo lively a manner, as may at the ſame time both entertain the audience, and make the deepeſt impreſſion upon their minds.

101. Sometimes a repetition is made, by running a compariſon between the ſpeaker's own arguments and thoſe of the adverſe party. But when the diſcourſe is very long, and the arguments inſiſted on have been many, to prevent the hearers loſing patience by a more particular recital, the orator ſometimes only juſt mentions ſuch things as he thinks of leaſt conſequence, by ſaying, that he omits or paſſes over them, till he comes to what is of greater moment, which he repreſents more fully. And this is what the writers upon this art call *preterition*.

102. II. By an *addreſs to the paſſions*, the orator ſometimes endeavours occaſionally to work upon his hearers in other parts of his diſcourſe, but eſpecially in the concluſion, where he is warmeſt himſelf, and labours to make them ſo. For the main deſign of the introduction is to conciliate the hearers; of the narration, propoſition, and confirmation, to inform them; and of the concluſion, to move them. And therefore, ſays Quintilian, "Here all the ſprings of eloquence are to be opened. It is here we ſecure the minds of the hearers, if what went before was well managed. Now we are paſt the rocks and ſhallows, all the ſails may be hoiſted. And as the greateſt part of the concluſion conſiſts in illuſtration, the moſt pompous language and ſtrongeſt figures have place here." The paſſions, which the orator addreſſes, differ according to the nature of the diſcourſe. In demonſtrative orations, when laudatory, —love, admiration, and emulation, are uſually excited; but in invectives,—hatred, envy, and contempt. In deliberative ſubjects, either the hope of gratifying ſome deſire is ſet in view, or the fear of ſome impending evil. And in judicial diſcourſes, almoſt all the paſſions have place, but more eſpecially *reſentment* and *pity*.

103. But the ſame paſſion may be excited by very different methods. Horace endeavours to recommend virtue, by laughing vice out of countenance; Perſius moves us to an abhorrence of vice, with the ſeverity of a philoſopher; and Juvenal, by open and vehement invectives. So orators make uſe of all theſe methods, but they ſhould not dwell long upon the ſame paſſion. When the emotion is once carried as high as it can be, the hearers ſhould be left under its influence.

104. Orators ſometimes endeavour to raiſe contrary paſſions, as they are concerned for oppoſite parties. So the accuſer excites anger and reſentment, but the defendant pity and compaſſion. But the orator ſhould always expreſs the ſame paſſion himſelf with which he endeavours to affect others, in his action, voice, language, words, and expreſſion. But a decency and propriety of character is always to be obſerved. This juſtneſs of character is admirably well obſerved by Cicero, in his defence of Milo; who, being a man of moſt undaunted courage, it would have been improper to introduce him moving pity, and begging for mercy. Cicero therefore takes this part upon himſelf; and what he could not do with any propriety in the character of Milo, he performs in his own.

105. But as perſons are commonly more affected with what they ſee than with what they hear, orators ſometimes call in the aſſiſtance of that ſenſe in moving the paſſions. For this reaſon it was uſual among the Romans, in judicial caſes, for accuſed perſons to appear with a dejected air and a ſordid garb, attended by their parents, children, &c. with the like dreſs and aſpect. The Areopagites at Athens, if the orator began to ſay any thing which was moving, an officer immediately bade him be ſilent. There is certainly a medium between theſe extremes.

Sect. VII. *Of* Digreſſion, Tranſition, *and* Amplification.

106. Beſides the number, order, and nature of the parts which conſtitute a complete and regular oration, explained in the preceding chapters, there are ſeveral other things neceſſary to be known by an orator, which come under the ſecond branch of his art.—Theſe are, *Digreſſion*, *Tranſition*, and *Amplification*.

107. I. *Digreſſion*, as defined by Quintilian, is, "A going off from the ſubject we are upon to ſome different thing, which may however be of ſervice to it." As where a ſubject is of itſelf dry, or requires cloſe attention, it relieves the mind by ſomething entertaining. But they ſhould neither be too frequent nor too long. Indeed orators ſometimes, when ſore preſſed, and the cauſe will not bear a cloſe ſcrutiny, artfully run into digreſſions, to divert the attention of the hearers from the ſubject, and turn them to a different view. And in ſuch caſes, to be unobſerved, they do it tacitly

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tacitly, that they may get clear of a difficulty, till they enter upon ſome freſh topic.

108. II. TRANSITIONS are often uſed not only after a digreſſion, but upon other occaſions. A tranſition is, "A form of ſpeech, by which the ſpeaker in a few words tells his hearers both what he has ſaid already, and what he next deſigns to ſay." Where a diſcourſe conſiſts of ſeveral parts, this is often very proper, eſpecially when the parts are of a conſiderable length; for it aſſiſts the hearers to carry on the ſeries of the diſcourſe in their minds. It is likewiſe a relief to the attention, to be told when an argument is finiſhed, and what is to be expected next. But ſometimes, in paſſing from one thing to another, a general hint is thought ſufficient to prepare the hearers, without ſpecifying what has been ſaid, or is next to follow. And at other times, for greater brevity, the tranſition is imperfect, and mention made only of the following head.

109. III. By AMPLIFICATION is meant, not barely enlarging upon a thing, but ſo to repreſent it, in the fulleſt and moſt comprehenſive view, as that it may in the livelieſt manner ſtrike the mind, and influence the paſſions. Rhetoricians have obſerved ſeveral ways of doing this.

110. One is to aſcend from a particular thing to a general. Thus Cicero, in his defence of Archias, having commended him as an excellent poet, ſays many things in praiſe of polite literature in general.

111. A contrary method is, to deſcend from a general to a particular. As if any one, while ſpeaking in commendation of eloquence, ſhould illuſtrate what he ſays from the example of Cicero, and ſhow the great ſervices he did his country, and the honours he gained to himſelf, by his admirable ſkill in oratory.

112. A third method is by an enumeration of parts. Such repreſentations greatly enlarge the image of a thing, and afford the mind a much clearer view of it than if it were contracted into one ſingle propoſition.

113. Another method ſimilar to the former is when any thing is illuſtrated from a variety of cauſes or effects. Such a number of reaſons, brought together, ſet a thing in a very ſtrong and clear light. Thus Cicero deſcribes the force and excellence of ORATORY from its ſurpriſing effects, when he ſays, "Nothing ſeems to be more excellent, than by diſcourſe to draw the attention of a whole aſſembly, delight them, and ſway their inclinations different ways at pleaſure."

114. A thing may likewiſe be illuſtrated by its oppoſite. Thus the bleſſings and advantages of peace may be recommended from the miſeries and calamities of war.

115. GRADATION is another beautiful way of doing this. So when Cicero would aggravate the cruelty and barbarity of Verres for crucifying a Roman citizen, a puniſhment only inflicted upon ſlaves, he takes this way of doing it.

116. Facts may be *amplified* from their circumſtances; as time, place, manner, event, and the like. As the deſign of *amplification* is not barely to prove the truth of things, but to adorn and illuſtrate them, it requires a florid and beautiful ſtyle, conſiſting of ſtrong and emphatic words, flowing periods, harmonious numbers, lively tropes and bright figures.

PART III.

OF ELOCUTION.

117. ELOCUTION directs us to ſuit both the words and expreſſions of a diſcourſe to the nature of the ſubject, or to ſpeak with propriety and decency. This faculty is called ELOQUENCE; and thoſe who are poſſeſſed of it are ſtyled *eloquent*.

118. *Elocution* is twofold, *general* and *particular*. The former treats of the ſeveral properties and ornaments of language in common; the latter conſiders them as they are made uſe of to form different ſorts of ſtyle.

I. GENERAL ELOCUTION.

119. THIS, according to rhetoricians, conſiſts of three parts; *Elegance*, *Compoſition*, and *Dignity*. A diſcourſe which has all theſe properties ſuitably adjuſted, muſt, with reſpect to the language, be perfect in its kind.

SECT. I. *Of* ELEGANCE.

120. ELEGANCE conſiſts in *Purity* and *Perſpicuity*; both with reſpect to ſingle words and their conſtruction in ſentences. Theſe properties in language give it the name of *elegant*, for a like reaſon that we call other things ſo, which are clean and neat in their kind.

121. I. PURITY ſignifies the choice of ſuch words and phraſes as are agreeable to the uſe of the language in which we ſpeak: And ſo grammarians reduce the faults they oppoſe to it to two ſorts, called BARBARISM and SOLECISM; the former of which reſpects ſingle words, and the latter their conſtruction. But in oratory, neither all words nor all expreſſions are called pure which occur in language; but ſuch only as come recommended by the authority of thoſe who ſpeak or write with accuracy and politeneſs.

122. It often happens, that ſuch words and forms of ſpeaking as were introduced by the learned are afterwards dropped by them as mean and ſordid, from a ſeeming baſeneſs contracted by vulgar uſe.

123. Orators muſt alſo abſtain from antiquated or obſolete words and phraſes, as well as vulgar or ſordid ones; and the uſe of *new* terms, until they have been eſtabliſhed, ſhould alſo be carefully avoided. See LANGUAGE, Sect. VIII.

124. II. PERSPICUITY, as well as PURITY, conſiſts partly in *ſingle words*, and partly in their *conſtruction*.

125. i. As to *ſingle words* thoſe are generally beſt underſtood which are uſed in their proper ſenſe. But it requires no ſmall attention and ſkill to be well acquainted with the force and propriety of words.

126. All words may be divided into *proper words* and *tropes*. Thoſe are called *proper words*, which are expreſſed in their proper and uſual ſenſe: And *tropes* are ſuch words as are applied to ſome other thing than what they properly denote, by reaſon of ſome ſimiliitude, relation, or contrariety between the two things. So, when a ſubtle man is called a *fox*, the reaſon of the name is founded in a ſimilitude of qualities. If we ſay, *Cicero will always*

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always live, meaning *his works*, the cauſe is tranſferred to the effect. All words muſt at firſt have had one original and primary ſignification, which, ſtrictly ſpeaking, may be called their *proper ſenſe*. But through length of time, words loſe their original ſignification, and aſſume a new one, which then becomes their proper ſenſe. For example the word *knave* anciently ſignified a *ſervant*.

127. Sometimes two or more words have the ſame ſignification, and may therefore be uſed ſynonymouſly. Of this kind are the words *pity* and *compaſſion*. There are other words of ſo near an affinity to each other, that they are commonly thought ſynonymous. Such are *mercy* and *pity*; though mercy in its ſtrict ſenſe is exerciſed towards an offender, and pity reſpects one in diſtreſs. This peculiar force and diſtinction of words is carefully to be attended to. Though words, when taken in their proper ſignification, generally convey the plaineſt and cleareſt ſenſe; yet ſome are more forcible, ſonorous, or beautiful, than others. And by theſe conſiderations we muſt often be determined in our choice of them. So whether we ſay, *he got*, or *he obtained*, *the victory*, the ſenſe is the ſame; but the latter is more full and ſonorous.

128. As to tropes, though generally ſpeaking they are not to be choſen where perſpicuity is only deſigned, and proper words may be found; yet through the penury of all languages, the uſe of them is often neceſſary. And ſome of them, eſpecially metaphors, which are taken from the ſimilitude of things, may, when cuſtom has rendered them familiar, be conſidered as proper words, and uſed in their ſtead. Thus, whether we ſay, *I ſee your meaning*, or, *I underſtand your meaning*, the ſenſe is equally clear, though the latter expreſſion is proper, and the former metaphorical.

129. ii. But *perſpicuity* ariſes not only from a choice of *ſingle words*, but likewiſe from the *conſtruction* of them in ſentences. For the meaning of all the words in a ſentence, conſidered by themſelves may be very plain and evident; and yet, by a diſorderly placing them, or confuſion of the parts, the ſenſe of the whole may be obſcured. It is certain that the moſt natural order is the plaineſt, when both the words and parts of a ſentence are ſo diſpoſed as beſt agrees with their mutual relation and dependence upon each other.

130. AMBIGUITY of expreſſion is one cauſe of obſcurity. This ſometimes ariſes from the different ſenſes in which a word is capable of being taken. In all ſerious diſcourſes ambiguities ought carefully to be avoided. But obſcurity more frequently ariſes from the ambiguous conſtruction of words, which renders it difficult to determine in what ſenſe they are to be taken. Quintilian gives us this example: "A certain man ordered in his will, that his heir ſhould erect for him a ſtatue holding a ſpear made of gold." A queſtion aroſe here, of great conſequence to the heir from the ambiguity of the expreſſion, whether the words *made of gold* were to be applied to the *ſtatue* or the *ſpear*?

131. OBSCURITY is alſo occaſioned either by too ſhort and conciſe a manner of ſpeaking, or by ſentences too long and prolix: and *parentheſes*, when either too long or too frequent, have the ſame effect.

SECT. II. *Of* COMPOSITION.

132. COMPOSITION, in the ſenſe here uſed, gives rules for the ſtructure of ſentences, with the ſeveral members, words, and ſyllables, of which they conſiſt, in ſuch a manner as may beſt contribute to the force, beauty, and evidence of the whole.

133. Compoſition conſiſts of four parts, which rhetoricians call *period*, *order*, *juncture*, and *number*. The firſt treats of the ſtructure of ſentences; the ſecond of the parts of ſentences, which are words and members; and the two laſt of the parts of words, which are letters and ſyllables. For all articulate ſounds, and even the moſt minute parts of language, come under the cognizance of oratory.

134. I. *Of* PERIOD. In every ſentence or propoſition, ſomething is ſaid of ſomething. That of which ſomething is ſaid, logicians call the *ſubject*, and that which is ſaid of it, the *predicate*: but in grammatical terms, the former is *a noun ſubſtantive*, and the latter *a finite verb*, denoting affirmation, and ſome ſtate of being, acting, or ſuffering.

135. A ſimple ſentence conſiſts of one ſuch noun and verb, with whatever elſe is joined to either or both of them. And a compound ſentence contains two or more of them; and may be divided into ſo many diſtinct propoſitions, as there are ſuch nouns and verbs, either expreſſed or underſtood.

136. Some ſentences conſiſt, either wholly or in part, of ſuch members as contain in them two or more compound ones, which may therefore, for diſtinction's ſake, be called *decompound members*. In the proper diſtinction and ſeparation of the members in ſuch complex ſentences, the art of *pointing* chiefly conſiſts. For the principal uſe of a comma is to divide the ſimple members, a ſemicolon the compound ones, a colon ſuch as are decompounded, and a period the whole from the following ſentence. See PUNCTUATION.

137. Sentences, with reſpect to their form or compoſition, are diſtinguiſhed into two ſorts, called by Cicero *tracta*, ſtraight or direct; and *contorta*, bent or winding. By the former are meant thoſe whoſe members follow each other in a direct order, without any inflection; and by the latter, thoſe which ſtrictly ſpeaking are called *periods*. For περίοδος in Greek ſignifies a *circuit* or *circle*: And ſo the Latins call it *circuitus* and *ambitus*: By which both mean a ſentence conſiſting of correſpondent parts, ſo framed, that the voice in pronouncing them may have a proper elevation and cadency, and diſtinguiſh them by its inflection; and as the latter part returns back, and unites the former, the period, like a circle, ſurrounds and incloſes the whole ſenſe. This elevation of the voice, in the former part of the period, is by the Greeks called ἀναφορὰ and by the Latins *propoſitio*; and the depreſſion of it in the latter part, by the one ἀναδοσις, and by the other *redditio*.

138. As ſimple ſentences have not theſe correſpondent parts which require any inflection of the voice, nor a circular form, by reaſon of their brevity, they are not properly periods, in the ſtrict ſenſe

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ſenſe of the word: though, in common ſpeech, the words *ſentence* and *period* are uſed as equivalent terms. As to thoſe compound ſentences whoſe members follow each other in a direct order without any inflection, there is little art required in their compoſition. Since ſuch ſentences, therefore, may be limited at pleaſure, it ſeems more convenient, both for the ſpeaker and hearers, to confine them to a moderate length.

139. But the principal art relating to this part of compoſition lies in the frame and ſtructure of ſuch compound ſentences as are properly called *periods*. In the formation of theſe, two things are chiefly to be regarded; their *length* and *cadency*. As the length ought to be ſuited to the breath of the ſpeaker, the ancient rhetoricians ſcarce admit of more than four colons; by which we may underſtand compound members of a moderate ſize, which will be generally found a ſuitable and proportionate length. As to the cadency, Cicero has obſerved, that the ears judge what is full and what is deficient; and direct us to fill up our periods, that nothing be wanting of what they expect. When the voice is raiſed at the beginning of a ſentence, they are in ſuſpenſe till it be finiſhed; and are pleaſed with a full and juſt cadency, but are ſenſible of any defect, and diſpleaſed with redundancy. Therefore care muſt be taken that periods be neither deficient, and as it were maimed, ſo as to defraud the ears of what ſeemed to be promiſed them; nor, on the other hand, offend them by too long and immoderate excurſions. This riſe and cadency of the voice in pronunciation, depend on the nature and ſituation of the members.

140. By the word *members* are to be underſtood ſuch as are uncompounded. In a period of two members the turn of the voice begins with the latter member. If a ſentence conſiſt of three members, the inflection is beſt made at the end of the 2d member: for if it begin immediately after the firſt, the voice will be either apt to ſink too low, and not to be heard, before it reach the end; or elſe be precipitated, to prevent it. But a period of four members is reckoned the moſt complete and perfect, where the inflection begins at the middle, that is with the 3d member. Nor is it the ſame caſe here, as if, in a ſentence of three members, the cadency be made at the 2d; for in proportion to the time of raiſing the voice may the ſpace be allowed for its ſinking. But where the ſenſe does not ſuit with this diviſion at the entrance upon the 3d member, it ſhould be made at the 4th.

141. An equality of the members ſhould alſo be attended to in the compoſition of a period, the better to adjuſt their riſe and cadency. And for this reaſon, in ſentences of 3 members, where the cadency begins with the 3d, or in thoſe of 4 members, where it begins at the 4th, it promotes the harmony to make the laſt number longeſt. This is properly the nature of rhetorical periods, which, when rightly formed, have both beauty and dignity. But as all diſcourſe is made up of diſtinct ſentences, and whenever we expreſs our thoughts, it is in ſome of the forms above mentioned; ſo the uſe of them is not promiſcuous, but ſuited to anſwer different deſigns in ſpeaking. And in this view they are conſidered and made uſe of by the orator.

142. Examples of all theſe might be quoted from Cicero and other ancient orators; but it is unneceſſary to ſwell this article with long quotations. The Engliſh reader can hardly take up a newſpaper, during the ſitting of the Imperial Parliament, in which he will not find numerous examples of all the beauties of modern oratory, and the learned can eaſily conſult the orators of ancient Greece and Rome.

143. II. *Of* ORDER. By ORDER rhetoricians mean the placing each word and member of a ſentence in ſuch a manner as will moſt contribute to the force, beauty, or evidence of the whole.

144. Order is of two kinds, *natural* and *artificial*; and each of theſe may be conſidered with reſpect to the parts, either of ſimple or compound ſentences.

145. i. As to ſimple ſentences, we call that order NATURAL, when all the words in a ſentence are ſo placed, as they are connected with or follow each other in a grammatical conſtruction.

146. ii. ARTIFICIAL ORDER, as it reſpects ſimple ſentences, has little or no regard to the natural conſtruction of words; but diſpoſes them in ſuch a manner as will be moſt agreeable to the ear, and beſt anſwer the deſign of the ſpeaker.

147. As to compound ſentences, or ſuch as conſiſt of two or more members, either ſimple or compounded; what relates to the words in each member ſeparately is the ſame as in ſimple ſentences. But with regard to the diſpoſition of the ſeveral members, that is called the *natural order* which ſo places them as they mutually depend on each other. When this order is inverted, it is ſtyled *artificial*.

148. It is unneceſſary to enlarge farther, or to adduce examples upon this ſubject, as it is fully diſcuſſed, and the beauties as well as defects of the *analagous* and *tranſpoſitive languages* pointed out under the article LANGUAGE; *Sect.* IV—VI.

149. But there are ſome other conſiderations relating to order, which, being taken from the nature of things, equally ſuit all languages. So, in amplifying, there ſhould be a conſtant gradation from a leſs to a greater; as when Cicero ſays, *Ambition creates hatred, ſhyneſs, diſcords, ſeditions, and wars.* On the contrary, in extenuating, we ſhould deſcend from a greater to a leſs; as if, ſpeaking of the ancient laws of Rome, one ſhould ſay, *They were ſo far from ſuffering a Roman citizen to be put to death, that they would not allow him to be whipt, or even to be bound.* In conſtituting any whole, we put the parts firſt; as, *Invention, diſpoſition, elocution, and pronunciation, make up the art of oratory.* But in ſeparating any whole, the parts follow: as, *The art of oratory may be divided into theſe four parts; invention, diſpoſition, elocution, and pronunciation.* In every enumeration care muſt be taken not to mix the whole with the parts; but if it be mentioned at all, it muſt either be put firſt or laſt. So it would be wrong to ſay, *He was a man of the greateſt prudence, virtue, juſtice, and modeſty:* for the word *virtue* here contains in it the other three, and therefore ſhould not be inſerted among them. See LANGUAGE, *Sect.* VII.

150. III. JUNCTURE and NUMBER relate to letters and syllables; the former treating of their connection, and the latter of their quantity.

151. JUNCTURE respects the *quality* of syllables. A due attention is to be paid to the nature of the vowels, consonants, and syllables in the connection of words, with regard to the sound. When a word ends with a vowel, and the next begins either with a different vowel, or the same repeated, it usually renders the pronunciation hollow and unpleasant. Those which have the weakest and smallest sound follow best; because they occasion the least alteration of the organ in forming the two sounds. If a word end with a vowel, the next ought to begin with a consonant, or such a vowel whose sound may agree well with the former. But if a word conclude with a consonant, either a vowel should follow, or such a consonant whose proper pronunciation will suit with it. And the same syllable ought not to be repeated at the end of one word, and the beginning of the next. This last, however, rarely happens on our language, which abounds with consonants.

152. IV. NUMBER respects the *quantity* of syllables. In the Greek and Roman languages every syllable has its distinct quantity; and is either long, short, or common: two or more of which joined together in a certain order make a foot, and a determinate number of these in a different order constitute their several sorts of verse. Though their prose was not so confined with regard to the feet, either as to the kind or place of them, as their metrical compositions, yet it had a sort of measure, more especially in the rise and cadency of their periods. This they called *rhetorical number*. But their rules are not applicable to our language, which has not that accurate distinction of quantity in its syllables.

153. A great number of monosyllables do not sound well together. For as there ought to be a greater distance in the pronunciation between one word and another, than between the syllables of the same word, such pauses, though short, yet, when too frequent, make the sound rough, and thus spoil its harmony. This is the more necessary to be attended to, because the English language abounds with monosyllables. On the contrary, a continuation of many long words makes a sentence move too slow and heavily. And, therefore, such periods generally run best, which have a proper mixture of words of different lengths. Besides, as every word has its accent, which with us stands for quantity, a number, either of monosyllables or long words, coming together, abates the harmony, as it lessens the variety.

154. Several words of the same ending do not sound well together, especially where the accent falls upon the same syllable in each of them. For this creates too great a jingle by the similitude of sound; and displeases from an appearance of affectation. Of this kind is the following sentence; *Nothing is more welcome, delightsome, or wholesome, than rest to a wearied man.* In such expressions, if the order of the words cannot well be altered, some other word should be substituted in the room of one of them at least, to diversify the sound. Thus the sound might be varied by saying, *Nothing is more welcome, pleasant, or wholesome.*

155. But if a sentence end with a monosyllable, it is apt to hurt the cadency, and disappoint the ear; whereas words of a moderate length carry a greater force with them by the fulness of their sound, and afford the ear what it expected. There is one sort of monosyllables especially, which never sound well at the conclusion of a period, viz. the signs of cases. Thus we say, *Avarice is a crime which wise men are too often guilty of.* But the cadency would be more agreeable thus: *Avarice is a crime, of which wise men are too often guilty.* Nor are very long words well suited either to the beginning or conclusion of a period; for they retard the pronunciation at first, and fall too heavy at the end.

SECT. III. *Of* DIGNITY.

156. DIGNITY consists in the right use of tropes and figures. It is not sufficient for an orator to express himself with propriety and clearness, or in smooth and harmonious periods; but his language should be suited to the nature and importance of the subject. And therefore, as *elegance* gives rules for the first of these, and *composition* for the 2d, so does *dignity* for the last. It is evident, that different subjects require a different style and manner of expression; for, as Quintilian says, "What is magnificent in one discourse would be turgid in another." This variety in the manner of expression arises in a great measure from *tropes* and *figures*, which not only enliven and beautify a discourse, but give it likewise force and grandeur.

157. TROPES and FIGURES are thus distinguished: Tropes mostly affect single words, but figures whole sentences. A trope conveys two ideas to the mind by means of one word; but a figure throws the sentence into a different form from the usual manner of expression. Tropes are chiefly designed to represent our thoughts, but figures our passions.

§ I. *Of* TROPES.

158. A *trope* is a figure of words, and has been usually defined to be *the change of a word from its proper signification to some other with advantage, either as to beauty or strength.* But this definition is not strictly just; for, in every trope a reference is had to two things, which occasions two ideas; one of the thing expressed, and another of that to which it has a respect. For all tropes are taken, either from things internally or externally related; or from some similitude between them; or from a contrariety. The first of these is called *synecdoche*, the 2d *metonymy*, the 3d *metaphor*, and the last *irony*. The reasons which occasioned the introduction of tropes, as Quintilian observes, are three; *necessity, emphasis*, and *beauty*.

159. i. Tropes were first introduced from *necessity*, deriving their origin from the barrenness of language; because no language contains a sufficient number of proper words to express all the different conceptions of our minds: but the principal cause of their introduction seems to be that extensive influence which imagination possesses over every kind of speech. The mind considers the same thing various ways; views it in different lights;

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lights; and compares it with other things. Hence it is furnished with an almoſt infinite number of ideas, which cannot all be expreſſed by proper words, ſince new ideas occur daily. And were this poſſible, yet would it be impracticable; becauſe the multitude of words muſt be ſo vaſtly great, that the memory could not retain them, nor recal them as occaſion required. Tropes have redreſſed both theſe inconveniencies. Thus, where a word is wanting to expreſs any particular thing, it is clearly repreſented by the name of ſome other thing reſembling it; the cauſe is ſignified by the effect, the ſubject by the adjunct, or the contrary; and the whole is often underſtood by a part, or a part by the whole. Thus, by the uſe of tropes, the mind is helped to conceive of ſomething not expreſſed, from that which is expreſſed.

160. ii. A ſecond uſe of tropes is *Emphaſis*. Tropes often expreſs things with greater force than can be done by proper words. Sometimes a lively trope conveys a fuller and more juſt idea of a thing than a large periphraſis. Thus, when Virgil calls the Scipios *two thunderbolts of war*, he gives a more lively image of the rapid force and ſpeedy ſucceſs of their arms than could have been conveyed by a long deſcription in plain words. And in many caſes the tropical uſe of words is ſo emphatical, that in this reſpect it may be juſtly eſteemed the moſt proper. So, *incenſed with anger, inflamed with deſire, fallen into an error*, are all metaphorical expreſſions, yet perhaps no proper words can be made uſe of, which will convey a more lively image of the thing we deſign to repreſent by them.

161. iii. *Beauty* and *ornament* have been another cauſe of the uſe of tropes. Some ſubjects require a more florid and elegant dreſs than others. And it is the buſineſs of an orator to entertain his hearers while he inſtructs them. Cicero has obſerved, that "as garments were firſt invented from neceſſity, to ſecure us from the injuries of the weather, but improved afterwards for ornament and diſtinction; ſo the poverty of language firſt introduced tropes, which were afterwards increaſed for delight."

162. As to the choice of tropes, they ought neither to be obſcure nor too far-fetched, leſt they ſhould become unintelligible. It is neceſſary, in a good trope, not only that there be a near affinity between the two ideas, but likewiſe that this affinity be obvious. A trope ſhould likewiſe bear a due proportion to the thing it is deſigned to repreſent, ſo as neither to heighten nor diminiſh the juſt idea of it. Poets indeed are allowed a greater liberty in this reſpect; but an orator ſhould be modeſt in his expreſſions.

163. As a moderate uſe of tropes, juſtly applied, beautifies and enlivens a diſcourſe, ſo an exceſs of them cauſes obſcurity, by running it into abſtruſe allegories and riddles. Tropes are not the ordinary dreſs of our thoughts, but a foreign habit; and therefore he who fills his diſcourſe with a continued ſeries of them, acts like one who appears in public in a ſtrange dreſs. Care ſhould alſo be taken not to tranſfer tropes from one language into another. For as they are often taken from the manners, cuſtoms, and occurrences of particular nations; ſo they may be very plain and obvious to thoſe among whom they firſt took their riſe, but altogether unintelligible to others who are unacquainted with the reaſon of them.

164. TROPES are divided into *primary* and *ſecondary*.

165. I. PRIMARY TROPES are ſubdivided into four ſpecies; 1. *Metaphor*: 2. *Metonymy*: 3. *Synecdoche*: 4. *Irony*.

166. I. A METAPHOR is uſually defined, *A trope, which changes words from their proper ſignification to another different from it, by reaſon of ſome ſimilitude between them.* But it is certain that a word, when uſed metaphorically, does not alter its ſignification, but retains its proper ſenſe. Cicero calls a metaphor *a ſimilitude reduced to a ſingle word*. It is a ſimilitude, when I ſay of a man, he has *acted like* a lion; and a metaphor, when I ſay, *he is a lion*.

167. The uſe of metaphors is as extenſive as univerſal nature. For there are ſcarce any two things which have not ſome ſimilitude between them. However, they may all be reduced to four kinds. 1. Thoſe taken from ſimilitudes between animate beings. 2. Thoſe borrowed from ſimilitudes between inanimate beings. 3. Thoſe taken from ſimilitudes between inanimate things and animals: and, 4. Thoſe which are eſteemed the fineſt and ſtrongeſt, which aſcribe *life and action to inanimate things*.

168. However, care muſt be taken not to venture upon too bold and daring metaphors. Poets indeed claim greater liberty in this reſpect. But the orator ſhould reaſon coolly, though ſtrongly and forcibly; and not by theatrical repreſentations ſo tranſport the mind as to take it off from reflection. Yet metaphors ought not to ſink below the dignity of what they are deſigned to expreſs; but the idea they convey ſhould at leaſt be equal to the proper word in the place of which they are ſubſtituted. All forced and harſh metaphors ſhould be avoided, nor ſhould they be too numerous; in a word, they ought not to be uſed, but either where a proper word is wanting, or where they are more ſignificant or beautiful than the proper word. See METAPHOR, § 2.

169. II. METONYMY, as defined by Quintilian, is *the putting one word for another*. But Voſſius deſcribes it more fully, when he calls it, "A trope which changes the name of things that are naturally united, but in ſuch a manner as that one is not the eſſence of the other." A word uſed as a metonymy changes its *ſenſe*, and denotes ſomething different from its proper ſignification. Thus, when *Mars* is put for *war*, and *Ceres* for *corn*, they loſe their perſonal ſenſe, and ſtand for the effects of which thoſe deities were ſaid to be the cauſe.

170. A metonymy is not ſo extenſive as a metaphor, nor altogether ſo neceſſary; becauſe nothing is ſaid by a metonymy, which cannot be expreſſed in proper words; whereas metaphors are often uſed for want of proper words to expreſs ſome ideas. However, metonymies enrich a diſcourſe with an agreeable variety, and give both force and beauty to an expreſſion. And ſome metonymies, in common diſcourſe, are more frequently made uſe of than the proper words in whoſe room they are put. So, it is more uſual to ſay, *This is ſuch a perſon's hand*, or *I know his hand*, than his *writing*,

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writing, when we intend this laſt ſenſe of the word. Metonymies are commonly diſtinguiſhed into four kinds, and receive their names from the *cauſe* and *effect*, the *ſubject* and the *adjunct*.

171. i. A *metonomy of the cauſe* is when the external cauſe is put for the effect; as *tongue* for *language*, *ſword* for *ſlaughter*, &c.

172. ii. The ſecond kind of metonymy puts the effect for the efficient cauſe, whether the agent, or only the means and inſtrument. So Virgil calls the two Scipios *the deſtruction of Lybia*, becauſe they were the agents who effected it.

173. iii. The third kind of metonymy is, when the ſubject is put for the adjunct. Thus the ſeat of any faculty or affection is uſed for the faculty or affection itſelf. So it is uſual to ſay, *a man of a clear head*, when we mean a clear mind, or of *a warm heart*, when we mean kind affections. Thus alſo the *time* is put for the perſons living in it; as *the degeneracy of the preſent age, the virtue of former times*. The popiſh doctrine of tranſubſtantiation is founded upon an abuſe of this trope. For, when our Saviour, ſpeaking of the bread and wine then before him, ſays, "This is my body, and this is my blood," his plain meaning is, they were the ſigns of his body and blood, the thing ſignified being put for the ſign by this ſort of metonymy. But the Papiſts abſurdly take the expreſſion literally. In like manner, our Saviour, in a metaphorical ſenſe, calls himſelf *a vine*, and *a door*, expreſſions which even the Catholics themſelves do not interpret literally.

174. iv. The fourth kind of metonymy is that wherein the adjunct is put for the ſubject. As when Virgil ſays, "They lie down upon purple;" that is, upon couches died with purple. By this trope virtues and vices are put for the perſons in whom they are found. As in that beautiful paſſage of Cicero, where, comparing the profligate army of Catiline with the forces of the ſtate, he ſays, "On this ſide modeſty is engaged, on that impudence; on this chaſtity, on that lewdneſs; on this integrity, on that deceit; on this piety, on that profaneneſs; on this conſtancy, on that fury; on this honour, on that baſeneſs; on this moderation, on that unbridled paſſion; in a word, equity, temperance, fortitude, prudence, and all virtues, engage with injuſtice, luxury, cowardice, raſhneſs, and all vices." A third uſe of this trope is by putting a thing for the time in which it was done. Thus we ſay of a perſon, *he has ſerved ſo many campaigns*, meaning ſo many ſummers. Laſtly, the ſign is put for the thing it ſignifies; as, *the crown* for *the regal dignity*, and *the ſword* for *the authority of the magiſtrate*.

175. III. Synecdoche is a trope by which either the whole of a thing is put for a part of it, or a part for the whole; ſo that the two things whoſe ideas are preſented to the mind in this trope are internally related to each other. In a *ſynecdoche* the word retains its proper ſenſe, and the expreſſion is elliptical. A thing may be conſidered as a whole in three different reſpects, which logicians call an *univerſal*, *eſſential*, and *integral whole*. An univerſal whole is any genus with regard to its ſpecies; as *animal* with reſpect to *men* and *brutes*, or *philoſophy* with reſpect to the *arts* and *ſciences*. An eſſential whole conſiſts of matter and form; as, a *man* of *body* and *ſoul*. And an integral whole is any body or quantity, with reſpect to the parts of which it is compoſed; as, an *human body* with reſpect to its *members*; or a *year*, as diviſible into *months*, *weeks*, and *days*. Hence ariſe ſix ſpecies of ſynecdoche.

176. (1.) The firſt puts the genus for the ſpecies. Thus, virtue in general is ſometimes uſed to denote ſome particular virtue; as, when Cicero mentions virtue as one of the four qualifications neceſſary in a general, he means greatneſs of mind.

177. (2.) The ſecond kind of ſynecdoche puts the ſpecies for the genus. Thus *bread* denotes any kind of food; as when a perſon is ſaid *to get his bread by his labour*; and *money* is put for any kind of wealth.

178. (3.) The third ſpecies is, when the eſſential whole is put for one of its parts; that is, either for the matter or form. Thus, it is uſual to ſay of a deceaſed perſon, *He was buried at ſuch a time*. And, in the inſcriptions of ſepulchral monuments, *Here lies ſuch an one*, that is, his *corpſe*.

179. (4.) The fourth kind of ſynecdoche is, when either the matter or form is put for the whole being. Thus *ſilver* and *gold* are uſed to ſignify money made of thoſe metals. And *ſoul* is put for the *whole perſon*. This way of ſpeaking occurs nowhere more frequently than in the ſacred writings, unleſs in Sir J. Sinclair's *Statiſtical Account of Scotland*. But ſometimes only part of the matter ſtands to expreſs the whole eſſence or being; thus, ſo many *head of cattle* means *entire cattle*.

180. (5.) By the 5th ſpecies of ſynecdoche, the whole of any material thing or quantity, whether continued or diſcrete, is put for a part of it. So when Cicero ſays, *A war is kindled through the whole world*, he calls the Roman empire *the world*. The ſame figure is uſed by St Luke, ch. ii. ver. i. And as to diſcrete quantity, our Saviour, uſing this trope, ſaid he ſhould be *three days and three nights in the heart of the earth*. Though he did not continue three whole days and three nights in the grave, but only part of the firſt and third day, and the whole ſecond day, with the two whole nights between the firſt and third day. By this kind of ſynecdoche, alſo, the plural number is ſometimes put for the ſingular.

181. (6.) The ſixth and laſt kind of ſynecdoche puts a part of any material thing or quantity for the whole of it. So we ſay of a fleet, that it *conſiſts of ſo many ſail*; meaning, *ſo many ſhips*. And by this trope, that is aſcribed to a ſingle perſon which was done by the aſſiſtance of others, and in conjunction with them: As when it is ſaid, that Lord Nelſon defeated the French at Aboukir. To this kind of ſynecdoche may alſo be referred expreſſions in which the ſingular number is put for the plural; as, *A man is liable to be miſled by irregular paſſions*; meaning *mankind in general*.

182. IV. Irony is *a trope in which one contrary is ſignified by another*: As if any one ſhould ſay, *Well done*; when his deſign is to intimate that the thing was *ill done*. Not that the word is changed from its uſual ſignification; but by the circumſtances attending the expreſſion, we perceive the contrary to what is ſpoken is intended. Quintilian obſerves, that an irony may be known by one of theſe three ways: "By the manner of pronunciation,

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ciation, or from the nature of the perſon or the thing. For where any of theſe do not ſuit with the words, it is plain the ſpeaker intends the contrary."

183. The ſubjects of irony are vices and follies of all kinds; and this way of expoſing them is often more effectual than ſerious reaſoning. And therefore we find the moſt ſerious perſons have not declined the uſe of this trope upon proper occaſions. SOCRATES uſed it ſo much, that he got the name of ειρων, that is, the *droll*. In the ſacred writings we have a remarkable inſtance of it in the prophet Elijah, where he challenges the prieſts of Baal to prove the truth of their deity. (See 1 Kings, xviii, 27.) And Solomon takes the like method to expoſe the follies of youth by an ironical apoſtrophe: ſee Eccleſ. xi, 9. Nay, our Saviour himſelf thought fit thus to reprove the Jewiſh doctors, when he ſays, "*Full well* ye reject the commandment of God, that ye may keep your own traditions:" Where, by the words *full well*, καλως, it is evident that a ſevere reprimand was intended. Irony is alſo uſed on a variety of occaſions by Cicero.

184. II. SECONDARY TROPES are ſo called, becauſe they are all of the ſame nature with the former, and may be referred to ſome one or other of them, though they have received different names. They are 8 in number; *Antonomaſia, Communication, Litotes, Euphemiſm, Catachreſis, Hyperbole, Metalepſis*, and *Allegory*. The 3 firſt are ſimple tropes, and may all be referred to a *Synecdoche*. But the 5 laſt are of a mixed or complex nature, and not confined to any one of the primary tropes.

185. I. ANTONOMASIA. A common or general word is ſometimes uſed for the proper name of ſome particular thing or perſon, who upon any account is eminent and remarkable. So we ſay, *He is gone to*, or *he came from the city*, that is, *London*. By the *Scriptures* we mean the *Bible*. *The orator* is uſed for Cicero, *the poet* for Homer or Virgil, *the philoſopher* for Ariſtotle; and *the apoſtle*, for St Paul. On the contrary, the proper names of things or perſons are ſometimes applied to any other of the ſame character. Thus we uſe the word *goſpel* for any certain and undoubted truth. And *Punic faith* proverbially ſtood for falſehood among the Romans.

186. II. COMMUNICATION, among orators, ſignifies a change of perſons. Sometimes, to prevent the imputation of pride, in aſſuming to themſelves the praiſe of any laudable action, they aſcribe it to their hearers, and do not ſay, *we*, but *ye did ſo and ſo*. At other times, when it is neceſſary to remind them of ſomething they have done amiſs, or to caution them againſt ſome wrong ſtep, they take it upon themſelves, or join themſelves with them, and do not ſay, *you have done this*, or *do not do this*; but, *we have done it*, or *let us not do it*. At other times, in compliment to their hearers, they join them as partners in the commendable actions or virtues of other perſons. Such tropes often occur both in Demoſthenes and Cicero.

187. III. But there is a mode of ſpeech, in which, by denying the contrary, more is intended than the words expreſs. This is called LITOTES; and is often uſed where a perſon is led to ſay any thing in his own praiſe, or to ſoften an expreſſion which in direct terms might give offence. As if one ſhould ſay, *I do not commend you for that*; meaning, *I greatly diſcommend* or *blame you for it*.

188. IV. When any diſpleaſing or ungrateful thing is expreſſed by a more ſoft and agreeable word, it is called EUPHEMISM. As *death* carries in it a diſagreeable idea, inſtead of ſaying a perſon is dead, we often ſay *he is departed*. But when St Luke, ſpeaking of Stephen, who was ſtoned to death, ſays *he fell aſleep*; this is a beautiful metaphor.

189. V. CATACHRESIS ſignifies in general any harſh trope, though it is moſt commonly found in metaphors. It is principally uſed by poets, to enforce an expreſſion, where the proper word does not ſeem ſtrong enough. As when Milton, in deſcribing the angel Raphael's deſcent from heaven, ſays, he *Sails between worlds and worlds*.

190. VI. HYPERBOLE is the boldeſt of all tropes: for it exceeds the ſtrict bounds of truth, and repreſents things either greater or leſs, better or worſe, than they really are. But the repreſentation is made in ſuch a manner as not to impoſe on the hearers. For an *hyperbole* is not uſed to deſcribe any thing accurately, but only to magnify or depreſs it in a conſiderable degree, when we do not chooſe to repreſent it exactly. The exceſs in this trope is called *auxeſis*; as when we ſay of any thing that is very high, *it reaches to the ſkies*. The defect, or contrary extreme, is termed *meioſis*; So we ſay of a very lean perſon, *he is nothing but ſkin and bones*, or a *mere ſkeleton*. It is principally metaphorical, but ſometimes taken from other tropes. Thoſe hyperboles, which are expreſſed comparatively, are commonly moſt emphatical. To ſay a thing is *as light as a feather*, carries the idea very far; but to ſay *it is lighter*, heightens it greatly.

191. VII. Sometimes two or more tropes, and thoſe of a different kind, are contained under one word; ſo that ſeveral gradations, or intervening ſenſes, come between the word that is expreſſed and the thing deſigned by it. And this is called a METALEPSIS. The conteſts between Sylla and Marius proved very fatal to the Roman ſtate. Julius Cæſar was then a young man. But Sylla obſerving his aſpiring genius, ſaid of him, "In this young man there are many Mariuſes." In this expreſſion there is a *metalepſis*, containing a *ſynecdoche*, an *antonomaſia*, and a *metonymy*. So that Sylla's meaning, diveſted of theſe tropes, was, that Cæſar would prove a moſt dangerous perſon to the Roman republic; which afterwards proved true. This trope is frequently met with in poets.

192. VIII. ALLEGORY is a continuation of ſeveral tropes in one or more ſentences. Thus Cicero ſays, "Fortune provided you no field, in which your virtue could run and diſplay itſelf:" where the words *field* and *run* are metaphors taken from corporeal things, and applied to the mind. But in allegories, care ſhould be taken, that the ſame kind of trope be carried through the whole, ſo as to compoſe one uniform and conſiſtent ſet of ideas. It is likewiſe neceſſary that the alluſions be all evident. Theſe are called *pure allegories*. See ALLEGORY.

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§ II. *Of* FIGURES.

193. THIS term ſeems to have been borrowed from the ſtage, where the different habits and geſtures of the actors, ſuitable to the ſeveral characters they ſuſtained, were by the Greeks called σχηματα, and by the Latins *figuræ*: And it is uſual to ſay of a perſon, both with reſpect to his dreſs and action, that he makes *a very bad*, or *a very graceful figure*. As language is the dreſs of our thoughts, in which they appear to others; ſo any particular manner of ſpeaking, may be called its *figure*. But rhetoricians reſtrain the ſenſe of the word to ſuch forms of ſpeech as differ from the ordinary ways of expreſſion; as the theatrical habits of actors on the ſtage differ from their uſual garb at other times. A *figure*, therefore, in the ſenſe uſed by rhetoricians, is, *A mode of ſpeaking different from, and more beautiful and emphatical than, the uſual way of expreſſing the ſame ſenſe.*

194. FIGURES ſeem to have been among the laſt ornaments introduced into the art of oratory. ARISTOTLE, who treats ſo accurately upon other parts, ſays very little of this. But the Greek writers who came after him have ſupplied that deficiency. They took notice of the ſeveral modes of expreſſion, obſerved their force and beauty, and gave them diſtinctive names. And indeed they have treated the matter with ſuch minuteneſs, that QUINTILIAN thinks they have multiplied figures to exceſs. But though it was ſo late before they were taken notice of, yet the uſe of them in diſcourſe was doubtleſs very ancient. The author of Homer's life, which ſome aſcribe to Plutarch, has ſhown, that there is ſcarce a figure mentioned by rhetoricians, but is to be met with in that moſt ancient poet. And, from the nature of ſpeech, we may eaſily perceive, that mankind muſt have very early introduced *tropes* to ſupply the want of proper words to expreſs their ſimple ideas; and the like neceſſity muſt have put them upon the uſe of figures to repreſent their paſſions. When the mind is diſturbed, we ſhow it by our words as well as by our countenances and actions. Hence ſome have ſtyled figures *the language of the paſſions*. And Cicero calls them "the *principal weapons* of an orator."

195. The advantage of figures, therefore, to an orator is evident. They are a ſort of natural eloquence, which one falls into, ſuitable to that temper of mind with which he is affected himſelf, and is deſirous to affect others. In a cool and ſedate diſcourſe, ſuch figures as convey our ſentiments with the greateſt ſtrength and evidence are moſt proper. There are others ſuited to brighten and enliven gay and ſprightly ſubjects. Others again are peculiarly adapted to expreſs the perturbations of the mind. Figures are peculiarly ſerviceable to an orator for anſwering theſe different intentions. CICERO's oration againſt CATILINE, when he had juſt diſcovered his plot to deſtroy the Roman ſtate and burn the city, affords a grand ſpecimen of the ſtrongeſt and moſt moving figures. And the diſcourſe had its deſired effect; for when Catiline ſtood up to make his defence, the whole ſenate was ſo inflamed from what Cicero had ſaid, that they had not patience to hear him ſpeak; upon which he immediately left the city. But different paſſions require different figures. When Dido finds that Æneas is about to leave her, ſhe uſes all her arts to detain him, and diſcovers her fear, anger, and revenge, with the whole crowd of paſſions which then poſſeſſed her mind, in a variety of moving figures, ſuited to raiſe the counter paſſions in his breaſt, as is finely repreſented by Virgil.

196. FIGURES ſhould always be accommodated to the ſentiments, and riſe in proportion to the images deſigned to be conveyed by them: but where the language outſtrips the thought, though it may pleaſe the ear, yet an intelligent hearer will ſoon ſee the impropriety. In the uſe of pathetic figures, it is generally better to be nervous than copious, that the images, by their cloſer union, may impreſs the mind with greater energy. But the too frequent uſe of figures ought to be avoided. They ſhould be ſo interwoven in a diſcourſe, as not to render the ſtyle rough and uneven, ſometimes high, and at other times low. In a word, they ſhould rather ſeem to ariſe from nature than art.

197. FIGURES are uſually divided into two ſorts, *figures of words*, and *figures of ſentences*. The difference conſiſts in this; that in the former, if we alter the words, or even the ſituation of them, we deſtroy the figure; but in the latter the figure remains, whatever words are uſed, or in whatever manner the order of them is changed. Thus, when the name of a perſon or thing is repeated, to intimate ſome known property or quality belonging thereto, it is a verbal figure called PLOCE. Cicero was a true patriot; and therefore we uſe this figure, that *at the time of Catiline's conſpiracy, Cicero appeared like Cicero*. The ſenſe would remain the ſame, but the figure would be loſt, if we ſhould ſay, *at that time Cicero appeared like himſelf*. So when two or more ſentences, or members of a ſentence, end with the ſame word, it is called EPISTROPHE; as when we ſay, *To loſe all reliſh of life, is in effect to loſe life*. But if the order of the words be changed in the latter clauſe thus, *To loſe all reliſh of life, is to loſe life in effect*; the figure vaniſhes. Such is the nature of the *verbal* figures. But it is not ſo in figures of ſentences; they continue the ſame, whatever alterations are made in the words.

198. I. VERBAL FIGURES may be diſtinguiſhed into 3 ſorts, as they conſiſt in a *deficiency*, a *redundancy*, or a *repetition*, of words.

199. I. Of the firſt ſort are *ellipſis* and *aſyndeton*.

200. i. ELLIPSIS, is when one or more words are wanting in a ſentence, to complete the conſtruction, and fully expreſs the ſenſe. This figure is often uſed in proverbial expreſſions: as when we ſay, *Many men, many minds*; i. e. *have many minds*; and, *The more danger, the more honour*; i. e. *gains more honour*. But where more is intended by ſuch expreſſions than mere brevity, and eſpecially when they are the effect of ſome paſſion, the figure is called APOSIOPESIS.

201. ii. ASYNDETON is when the particles that connect the members of a ſentence are left out, to repreſent either the celerity of an action, or the haſte and eagerneſs of the ſpeaker. Thus Cæſar expreſſes his ſpeedy conqueſt of Pharnaces: *I came, I ſaw, I conquered*. If he had inſerted the copulatives,

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copulatives, and ſaid, *I came, and I ſaw, and I conquered*, it would have retarded the expreſſion, and not given ſo full and juſt an idea of the ſwiftneſs of the action. In the laſt article, we took notice of the vehement and impetuous manner, in which Cicero attacked Catiline in his firſt oration, where his deſign was to fire the minds of the ſenate againſt him, and oblige him to leave the city. The next day, when Catiline was gone, he calls together the citizens, and in a ſort of rapture thus begins, *He is gone, departed, eſcaped, broke out;* intimating both the exceſſive rage in which Catiline left Rome, and the great pleaſure with which he was himſelf affected on that account. This conciſe way of ſpeaking adds likewiſe a great emphaſis to an expreſſion, and affects the mind with great force.

202. ii. The 2d ſort of verbal figures is contrary to theſe, and conſiſts in a redundancy or multiplicity of words; which are likewiſe two, *pleonaſmus* and *polyſyndeton*.

203. i. When we uſe more words than are neceſſary to expreſs a thing, it is called PLEONASMUS. This is done ſometimes for greater emphaſis, as when we ſay, *Where in the world is he?* At other times it is deſigned to aſcertain the truth of what is ſaid: So the ſervant in Terence, when the truth of what he had related was called in queſtion, replies, *It is certainly ſo; I ſaw it with theſe very eyes.*

204. ii. When the ſeveral parts of a ſentence are united by proper particles, it is called POLYSYNDETON. This adds a weight and gravity to an expreſſion, and by retarding the courſe of the ſentence, gives the mind time to reflect upon every part diſtinctly. We often meet with this figure in Demoſthenes, which very well ſuits with the gravity of his ſtyle. So he encourages the Athenians to proſecute the war againſt Philip II. from this conſideration, that now "they had ſhips, *and* men, *and* money, *and* ſtores, *and* all other things which might contribute to the ſtrength of the city, in greater number and plenty than in former times." Every article here has its weight; but if we remove the copulatives, the ſentence will loſe much of its force.

205. III. The 3d kind of verbal figures conſiſts in a *repetition*. Either the ſame word in ſound or ſenſe, is repeated; or one of a like ſound, or ſignification, or both.

206. I. Of the former ſort there are ten, called *antanaclaſis, ploce, epizeuxis, climax, anaphora, epiſtrophe, ſymploce, epanalepſis, anadiploſis*, and *epanodos*. The two firſt of theſe agree in ſound, but differ in ſenſe; the eight following agree in both.

207. (1.) When the ſame word in ſound, but not in ſenſe, is repeated, it is called ANTANACLASIS. This figure ſometimes carries a poignancy in it; and when it appears natural and eaſy, diſcovers a ready turn of thought. As when a ſon, to clear himſelf of ſuſpicion, aſſured his father *he did not wait for his death;* his father replied, *But I deſire you would wait for it.* Here the word *wait* is taken in two different ſenſes. And even our Saviour himſelf once uſes this figure, when he ſays to one of his diſciples, who deſired to go and bury his father; *Follow me, and let the dead bury their dead:* Where *dead* in the one place denotes a *natural death*, and in the other a *moral* or *ſpiritual death*.

208. (2.) Sometimes the name of ſome perſon or thing is repeated, to denote ſome particular character or property; and then it is called PLOCE. Thus Cicero ſays, *Young Cato wants experience, but yet he is Cato;* meaning he had the ſteady temper of the family.

209. (3.) When a word is repeated with vehemence in the ſame ſenſe, it is called EPIZEUXIS. This figure ſhows the earneſtneſs of the ſpeaker, and his great anxiety about what he ſays; and therefore has a natural tendency to excite the attention of the audience. It is ſuited to expreſs anger, ſurpriſe, ſorrow, and ſeveral other paſſions. As when Cicero would expreſs his indignation againſt Anthony for having been the chief inſtrument in bringing on the civil war, he ſays to him: *You, you Antony, puſhed Cæſar upon the civil war.* And when our Saviour would expreſs his great concern for the wickedneſs of the Jews, he does it in this pathetic manner: *O Jeruſalem, Jeruſalem, who killeſt the prophets!*

210. (4.) CLIMAX is a beautiful kind of repetition, when the word, which ends the firſt member of a period, begins the ſecond, and ſo through each member, till the whole is finiſhed. There is a great deal of ſtrength as well as beauty in this figure, where the ſeveral ſteps riſe naturally, and are cloſely connected. As in this example: *There is no enjoyment of property without government, no government without a magiſtrate, no magiſtrate without obedience, and no obedience where every one acts as he pleaſes.* But, as Quintilian obſerves, this figure is apt to look too much like art; for which reaſon he adviſes not to uſe it often.

211. (5.) When ſeveral ſentences, or members of a ſentence, begin with the ſame word, it is called ANAPHORA. This is a lively and elegant figure, and ſerves very much to engage the attention. For, by the frequent return of the ſame word, the mind of the hearer is held in an agreeable ſuſpenſe, till the whole is finiſhed. "You do nothing (ſays Cicero to Catiline), you attempt nothing, you think nothing, but what I not only hear, but alſo ſee and plainly perceive." It is frequently uſed by way of queſtion; which renders it not only beautiful, but ſtrong and nervous. As at the beginning of the ſame ſpeech: "Does neither the night-guard of the palace, nor the city-watch, nor the people's fear, nor the agreement of all good men, nor the meeting of the ſenate in this fortified place, nor the countenances and looks of this ſociety, at all move you?"

212. (6.) EPISTROPHE is contrary to the former, and makes the repetition at the end of each member or ſentence. As thus: *Since concord was loſt, friendſhip was loſt, fidelity was loſt, liberty was loſt; all was loſt.*

213. (7.) SYMPLOCE takes in both theſe laſt figures. As in that of Cicero: "You would pardon and acquit him, whom the ſenate hath condemned, whom the people of Rome have condemned, whom all mankind have condemned." Here the ſeveral members both begin and end with the ſame word. We have a beautiful inſtance of it in St Paul, when he ſays, "Are

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they Hebrews? ſo am I. Are they Iſraelites? ſo am I. Are they the ſeed of Abraham? ſo am I.

214. (8.) When a ſentence concludes with the word with which it began, it is called EPANALEPIS. As in that expreſſion of Plautus, "Virtue contains all things; he wants no good thing who has virtue." This figure adds a force to an expreſſion, when the principal thing deſigned to be conveyed is thus repeated, by leaving it laſt upon the mind. And it heightens the beauty, when the ſentence has an agreeable turn ariſing from two oppoſite parts.

215. (9.) When the next ſentence begins with the ſame word with which the firſt concluded, it is termed ANADIPLOSIS. As in the following inſtance: *Let us think no price too great for truth; truth cannot be bought too dear.* This figure generally ſuits beſt with ſolemn diſcourſes.

216. (10.) EPANODOS is the inverſion of a ſentence, or repeating it backwards, ſo that it takes in the two laſt figures; for it both begins and ends with the ſame word, and the ſame word is likewiſe repeated in the middle. It ſerves to illuſtrate and enforce the ſenſe, by ſetting it in two oppoſite views. As in that expreſſion of the prophet: "Wo unto them who call good evil, and evil good; who put darkneſs for light, and light for darkneſs!" &c.

217. II. Thoſe figures which conſiſt in a repetition of words of a like ſound or ſignification, or both, are 4; *paronomaſia, homoioptoton, ſynonymia,* and *derivatio;* the two firſt of which reſpect words that are ſimilar in ſound only, the third in ſenſe, and the laſt in both.

218. i. When two words very near in ſound, but different in ſenſe, reſpect each other in the ſame ſentence, it is called PARONOMASIA. As when we ſay, *After a feaſt comes a faſt;* and, *A friend in need is a friend indeed.* We uſually call it a PUN, which, when new, and appoſitely uſed, paſſes for wit, and ſerves to enliven converſation. Nor is it wholly to be excluded from grave and ſerious diſcourſes; for a witty jeſt has ſometimes had a better effect than a ſolid argument, and prevailed with thoſe who could not be moved by cloſe reaſoning. And therefore Cicero and the beſt ſpeakers have ſometimes recourſe to it.

219. ii. When the ſeveral parts of a ſentence end with the ſame caſe, or tenſe of a like ſound, this is the figure named HOMIOPTOTON. As thus: *No marvel though wiſdom complain that ſhe is either wilfully deſpiſed, or careleſsly neglected; either openly ſcorned, or ſecretly abhorred.* This figure is eſteemed moſt beautiful when the parts are all or nearly of the ſame length; as it adds to the harmony of the period, and renders the cadency of the ſeveral members more muſical. The Greek rhetoricians were much addicted to it, and Iſocrates is celebrated for it. But ſome of the beſt orators avoided it, as having too much the appearance of art. It appears nowhere ſo much in the works of Demoſthenes, as in an oration which he did not ſpeak himſelf, but wrote for his friend Diodorus, a man of that taſte, who was to pronounce it as his own.

220. iii. The next figure is SYNONYMIA. Strictly ſpeaking, ſynonymous words are thoſe which have exactly the ſame ſenſe; but there being few ſuch, the term is extended to comprehend words of a near affinity in their ſignification, which in diſcourſe are frequently put for one another. So, *to deſire,* and *intreat,* are uſed as equivalent terms; and *eſteem* and *honour* are often taken for ſynonymous words, though they have not preciſely the ſame ſenſe, for eſteem is the good opinion we entertain of a perſon, and honour the outward expreſſion of that opinion. When two or more ſuch words come together, they conſtitute this figure.

221. iv. When ſuch words as ſpring from the ſame root, as *juſtice, juſt, injuſtice, unjuſt,* and the like, come together in the ſame ſentence, they make the figure called DERIVATIO. This figure receives an additional beauty when repeated in two oppoſite members; as, *He wiſhed rather to die a preſent death, than to live a miſerable life.*

222. II. FIGURES *of* SENTENCES. Of theſe ſome are principally adapted for reaſoning, and others to move the paſſions.

223. I. FIGURES *ſuited for proof,* are ſix: *Prolepſis, hypobole, anacoinoſis, epitrope, parabole,* and *antitheſis.*

224. i. PROLEPSIS, or ANTICIPATION, is ſo called, when the orator firſt ſtarts an objection, which he foreſees may be made either againſt his conduct or cauſe, and then anſwers it. Its uſe is to prevent the exceptions of an adverſary, which cannot afterwards be introduced with ſo good a grace; and it ſerves to conciliate the audience, while the ſpeaker appears deſirous to repreſent matters fairly, and not to conceal any objection which may be made againſt him. The occaſions of this figure are various; and Cicero's orations abound with examples, as well as thoſe of our beſt ſpeakers in parliament.

225. ii. HYPOBOLE or *ſubjection,* is like the former; and is, when ſeveral things are mentioned that ſeem to make for the contrary ſide, and each of them refuted in order. It conſiſts of three parts, when complete; a propoſition, an enumeration of particulars with their anſwers, and a concluſion.

226. iii. ANACOINOSIS, or *communication;* by which the ſpeaker deliberates or expoſtulates either with the judges, the hearers, or the adverſary. Cicero uſes it in addreſſing the judges againſt Verres; and the ſacred writers ſometimes introduce God himſelf thus expoſtulating with mankind. See *Malachi* i. 6.

227. iv. EPITROPE, or *conceſſion,* grants one thing, to obtain another more advantageous. It is either real or feigned; and either the whole of a thing, or a part only, is granted. Nothing more confounds an adverſary than to grant him his whole argument, and at the ſame time either to ſhow that it is nothing to the purpoſe, or to offer ſomething elſe to invalidate it. Thus Cicero, in his defence of Milo, repreſents the taking off Clodius, with which Milo was accuſed, as a glorious action; after he has ſhown that Milo's ſervants did it without his knowledge.

228. v. PARABOLE or *ſimilitude,* illuſtrates a thing by comparing it with ſome other to which it bears a reſemblance. Similitudes are indeed but weak arguments, but where the deſign is not

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so much to prove what is doubtful, as to set things in a clear and agreeable light, they are very proper figures.

229. vi. ANTITHESIS, *contrast* or *opposition*, by which things contrary or different are compared, to render them more evident. Thus Cicero says, "The Roman people hate private luxury, but love public grandeur." This is a very florid figure; and suited no less for amplification than proof. It is esteemed a beauty in this figure when any of the members are inverted, which some call ANTIMETATHESIS. As where Cicero opposes the conduct of Verres when governor of Sicily, to that of Marcellus who took Syracuse the capital of that island. To this figure may also be referred OXYMORON, or *seeming contradiction*; that is, when the parts of a sentence disagree in sound, but are consistent in sense. As when Ovid says of Althea, that *she was impiously pious*. And so Cato used to say of Scipio Africanus, that "he was never less at leisure, than when he was at leisure; nor less alone than when alone." This is a strong and bold figure, which awakens the mind, and affords it an agreeable pleasure to find upon reflection, that what at first seemed contradictory, is not only consistent with good sense, but very beautiful.—The celebrated Dr BLAIR has these observations on antithesis; "Contrast has always this effect, to make each of the contrasted objects appear in the stronger light. White, for instance, never appears so bright as when it is opposed to black, and when both are viewed together. Antithesis, therefore, may, on many occasions, be employed to advantage, to strengthen the impression which we intend that any object should make. To render an antithesis more complete, it is always of advantage, that the words and members of the sentence expressing the contrasted objects be similarly constructed, and made to correspond to each other. At the same time, the frequent use of antithesis, especially where the opposition in the words is nice and quaint, is apt to render the style disagreeable. A maxim or moral saying properly enough receives this form; but where a string of such sentences succeed each other, where this becomes an author's favourite and prevailing manner of expressing himself, his style is faulty; and upon this account Seneca has been often and justly censured." There is another kind of antithesis, which consists in surprising us by the unexpected contrasts of things which it brings together; but it is wholly beneath the dignity of an orator, and is fit only for pieces of humour, calculated to excite ridicule.

230. II. FIGURES *suited to move the passions*, are 13; viz. *epanorthosis, paralepsis, parrhesia, aparithmesis, exergasia, hypotyposis, aporia, apostopesis, erotesis, ephonesis, epiphonema, apostrophe*, and *prosopopeia*.

231. (1.) EPANORTHOSIS, or *correction*, is a figure by which the speaker either recals or amends what he had last said. Sometimes one or more words are recalled, and others substituted in their room; at other times, without recalling what has been said, something else is substituted as more suitable. This is a very extensive figure, and used in addressing different passions. Cicero, in his defence of Milo, speaking to the judges concerning Clodius, says, "Are you only ignorant what laws, *if they may be called laws*, and not rather torches and plagues of the state, he was about to impose and force upon us?" Sometimes the correction is made by substituting something contrary to what had been said before; "Cæsar, (says Cicero), when Antony was most enraged, and we dreaded his cruel return, raised a very powerful army of invincible veterans; to affect which, he threw away his whole estate: Though I have used an improper word; for *he did not throw it away*, but employed it for the safety of the government.

232. (2.) PARALEPSIS, or *omission*, is a figure, when the speaker pretends to omit, or pass by, what at the same time he declares. It is used either in praise or dispraise. Thus Cicero, in his defence of Sextius; "I might say many things of his liberality, kindness to his domestics, his command in the army, and moderation during his office in the province; but the honour of the state presents itself to my view; and calling me to it, advises me to omit these lesser matters." There is a beautiful instance of this figure in St Paul's epistle to Philemon, ver. 19. Hermogenes observes, that this figure is principally used on three occasions: either when things are small, but yet necessary to be mentioned; or well known, and need not be enlarged on; or ungrateful, and therefore to be introduced with caution, and not set in too strong a light.

233. (3.) PARRHESIA, or *reprehension*. The orator sometimes prepares his hearers for this by commending them first, urging the necessity of it, representing his great concern for them as his motive, or joining himself with them. Thus Cicero charges the senate with the death of Servius Sulpicius, for sending him to Mark Antony under a very ill state of health. His design was to make them agree to a motion he was to make, that a statue and monument might be erected to his memory at the public expense. Sometimes the orator assumes an air of reproof, with a view only to pass a compliment with a better grace. As Cicero in his address to Cæsar, when he says, "I hear that saying from you with concern, 'That you have lived long enough, either for the purposes of nature, or glory:' for nature perhaps, if you think so; and, if you please, for glory; but what is principally to be regarded, *not* for your country."

234. (4.) APARITHMESIS, or *enumeration*, is when that which might be expressed by a few words is branched out into several particulars, to enlarge the idea, and render it the more affecting. Cicero, in pleading for the Manilian law, where his design is to conciliate the esteem of the people to Pompey, thus enlarges upon his character: "Now, what language can equal the virtue of Cneius Pompey? What can be said either worthy of him, or new to you, or which every one has not heard? For those are not the only virtues of a general which are commonly thought so; labour in affairs, courage in dangers, industry in acting, dispatch in performing, design in contriving; which are greater in him than in all other generals we have ever seen or heard of."

235. (5.) EXERGASIA, or *expolition*, has an affi-

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nity with the former figure; but differs in this, that it consists of several equivalent expressions, or nearly such, to represent the same thing in a stronger manner; whereas the other enlarges the idea by an enumeration of different particulars. So that this figure has a near relation to *synonymia*.

236. (6.) HYPOTYPOSIS, or *imagery*, is a description of things painted in such strong and bright colours as may help the imagination of the hearers to conceive of them as present to their view. It is peculiarly suited for drawing characters; and often affords the finest ornaments in poetry and history, as well as oratory. Cicero has thus drawn the picture of Catiline, consisting of an unaccountable mixture of contrary qualities. See *Orat. in Catil.* This figure requires a vigorous and lively genius.

237. (7.) APORIA, or *doubt*, expresses the debate of the mind with itself upon a pressing difficulty. A person in such a state is apt to hesitate, or start several things successively, without coming to any fixed resolution. Of this kind is that of Cicero for Cluentius, when he says, "I know not which way to turn myself. Shall I deny the scandal thrown upon him of bribing the judges? Can I say the people were not told of it? &c." Orators sometimes begin their discourse with this figure. A diffidence of mind at first is not unbecoming, but graceful. It carries in it an air of modesty, and tends very much to conciliate the affections of the hearers.

238. (8.) Sometimes a passion has that effect, not so much to render a person doubtful what to say, as to stop him in the midst of a sentence, and prevent his expressing the whole of what he designed; and then it is called APOSIOPESIS, or *concealment*. It denotes different passions; as anger, which, by reason of its heat and vehemence, causes persons to break off abruptly in their discourse. But Cicero, in a letter to Cassius, uses it to express fear, when he says to him, "Brutus could scarce support himself at Mutina; if he is safe, we have carried the day. But if—heaven avert the omen! all must have recourse to you." His meaning is, "If Brutus should be defeated."

239. (9.) EROTESIS, *interrogation*. Every question is not figurative; but it becomes figurative, when the putting it by way of question gives it life and spirit. As when Cicero says, "Catiline, how long will you abuse our patience?" Do not you perceive your designs are discovered?" It serves also to press and bear down an adversary. Thus Cicero in his defence of Plancius: "I will make you this offer, choose any tribe you please, and show, by whom it was bribed; and if you cannot, as I believe you will not, I will prove how he gained it. Is this a fair contest? Will you engage on this foot? I cannot give you fairer play. Why are you silent? Why do you dissemble? Why do you hesitate? I insist upon it, urge you to it, press it, require, and even demand it of you." Such a way of pushing an antagonist shows the speaker has great confidence in his cause.

240. (10.) ECPHONESIS, or *exclamation*, is a vehement extension of the voice, occasioned by a commotion of mind, naturally venting itself. This figure is used by Cicero to express a variety of passions. Thus, after his return from banishment, reflecting on those who had occasioned it, he breaks out into this moving exclamation: "O mournful day to the senate, and all good men, calamitous to the state, afflictive to me and my family, but glorious in the view of posterity!" His design was to excite an odium against the authors of his exile, when recalled in so honourable a manner.

241. (11.) EPIPHONEMA, or *acclamation*, has a great affinity with the figure. It is so called, when the speaker, at the conclusion of his argument, makes some lively and just remark upon what he has been saying, to give it the greater force: It is not so impetuous as exclamation, being usually expressive of the milder and more gentle passions. When Cicero has shown, that recourse is never to be had to force, but in cases of the utmost necessity, he adds, "Thus to think, is prudence; to act, fortitude; both to think and act, perfect and consummate virtue."

242. (12.) APOSTROPHE, or *address*, is when the speaker breaks off from the series of his discourse, and addresses himself to some particular person present or absent, living or dead; or even to inanimate nature: Thus he has an opportunity of saying many things with greater freedom than if immediately addressing the persons themselves. He can admonish, chide, or censure, without giving offence. Thus Cicero, in his defence of Milo, expressing his concern if he should not succeed in it, says, "And how shall I answer it to you, my brother Quintus, the partner of my misfortunes, who art now absent?" An appeal to heaven, or any part of inanimate nature, has something very sublime and solemn in it, which we often meet with in sacred writ. So the divine prophet, "Hear, O heavens! and give ear, O earth! for the Lord hath spoken." And Jeremy, "Be astonished, O ye heavens, at this." See APOSTROPHE.

243. (13.) PROSOPOPEIA, or *the fiction of a person*: by which, either an absent person is introduced speaking; or one who is dead, as if he were alive and present; or speech is attributed to some inanimate being. There is no figure, perhaps, which serves better purposes to an orator than this. For by it he is enabled to call in all nature to his assistance. There is scarce any thing fit to be said, but may be introduced this way. When he has severe things to say, and which may give offence as coming from himself, he avoids this, by putting them into the mouth of some other person from whom they will be better taken; or makes inanimate nature bring a charge, or express a resentment, to render it the more affecting. And by the same method he sometimes secures himself from a charge of flattery, in carrying a compliment too high. Cicero, in his oration for Balbus, introduces Marius, who was dead, to plead in his defence: "Can Balbus (says he) be condemned, without condemning Marius for a like fact? Let him be present to your thoughts, since he cannot be so in person. Let him tell you, he was not unacquainted with leagues, void of examples, or ignorant of war." And again, in his first invective against Catiline, he represents his country as expostulating with himself, and upbraiding him for suffering such a criminal as Catiline to live. In the

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the management of this figure, care ſhould be taken that what is ſaid be always conſiſtent with the character introduced.

244. In treating upon figures, we have hitherto conſidered them ſeparately; but ſome expreſſions conſiſt of a complication of them, and may come under the denomination of ſeveral figures, as well verbal as thoſe of ſentences, differently conſidered. Examples of this the judicious reader will eaſily diſcover, both in ancient and modern orations.

II. PARTICULAR ELOCUTION, *or that part of* ELOCUTION *in which the* SEVERAL PROPERTIES *and* ORNAMENTS *of* LANGUAGE *are uſed to form* DIFFERENT SORTS *of* STYLE.

SECT. IV. *Of* STYLE, *and its* DIFFERENT CHARACTERS.

245. The word STYLE properly ſignifies the inſtrument which the ancients uſed in writing. For as they commonly wrote upon thin boards covered over with wax, and ſometimes upon the barks of trees, they made uſe of a long inſtrument like a bodkin, pointed at one end, with which they cut their letters, and broad at the other, to eraze any thing they choſe to alter. This the Latins called STYLUS. But though this be the firſt ſenſe of the word, yet afterwards it came to denote the manner of expreſſion. In this ſenſe we likewiſe uſe it, by the ſame kind of trope that we call any one's writing his *hand*. Style, then, in the common acceptation of the word, is the peculiar manner in which a man expreſſes his conceptions by means of language. The reaſons which occaſion a variety of ſtyle are principally theſe:

246. As ſpeech and writing are only ſenſible expreſſions of our thoughts, by which we communicate them to others, and as all men think more or leſs differently, ſo they naturally differ in their ſtyle. No two perſons, writing upon one ſubject, would uſe the very ſame words. And they would as certainly differ in their order and connection. From theſe internal characters, critics undertake to diſcover the authors of anonymous writings. We may often obſerve in authors a fondneſs for ſome particular words or phraſes; and a peculiarity in the turn of their ſentences, by which their ſtyle may be known, even when they deſign to conceal it.

247. There is likewiſe often a conſiderable difference in the ſtyle of the ſame perſon, in different periods of his life. Young perſons, whoſe invention is quick and lively, commonly run into a pompous and luxuriant ſtyle; and while they endeavour to repreſent every thing in the brighteſt colours, this renders their ſtyle verboſe and florid, but weakens the force and ſtrength of it. But as their imagination cools, and they acquire a more mature judgment, they cut off many ſuperfluities, and their ſtyle becomes more correct and nervous. But as old age ſinks the powers of the mind, and chills the imagination, the ſtyle, too, uſually grows dry and languid. Critics have obſerved ſomething of this difference in the writings of Cicero himſelf. To be maſter of a good ſtyle, therefore, it ſeems neceſſary that a perſon ſhould be endowed with a vigorous mind and lively fancy, a ſtrong memory, and a good judgment. By the imagination the mind conceives the images of things. If the impreſſions of theſe be clear and diſtinct, the ſtyle will be ſo too. But if the images are faint and imperfect, the ſtyle will be flat and languid.

248. Variety is neceſſary in diſcourſe to render it agreeable; and, therefore, without a large furniture of words and phraſes, the ſtyle will neceſſarily become inſipid, by the frequent return of the ſame terms and manner of expreſſion. But a ſolid judgment is highly requiſite to form a juſt and accurate ſtyle. In a word, the foundation of a good ſtyle is good ſenſe. Cicero recommends to all who are candidates for eloquence, and deſirous to become maſters of a good ſtyle, to write much. This affords them an opportunity to digeſt their thoughts, weigh their words and expreſſions, give every thing its proper force and evidence; and, by reviewing a diſcourſe when compoſed, to correct its errors, or ſupply its defects; till by practice they gain a readineſs both to think juſtly, and to ſpeak with propriety.

249. Different countries have not only a different language, but a peculiarity of ſtyle ſuited to their temper and genius. The eaſtern nations had a lofty and majeſtic way of ſpeaking. Their words are full and ſonorous, their expreſſions ſtrong and forcible, and warmed with the moſt lively and moving figures. This is evident from the Jewiſh writings in the Old Teſtament, in which we find a moſt agreeable mixture of ſimplicity and dignity. On the contrary, the ſtyle of the more northern languages generally partakes of the coldneſs of their climate. "There is (ſays Mr Addiſon) a certain coldneſs and indifference in the phraſes of our European languages, compared with the oriental forms of ſpeech. And it happens very luckily, that the Hebrew idioms run into the Engliſh tongue with a peculiar grace and beauty. Our language has received innumerable elegancies and improvements from that infuſion of Hebraiſms, which are derived to it out of the poetical paſſages in holy writ. They give a force and energy to our expreſſions, warm and animate our language, and convey our thoughts in more ardent and intenſe phraſes, than any that are to be met with in our own tongue. There is ſomething ſo pathetic in this kind of diction, that it often ſets the mind in a flame, and makes our hearts burn within us." *Spect.* N° 405.

250. Different nations vary in their cuſtoms and manners, which occaſions a diverſity in their ſtyle. This was remarkable in the Attics, Aſiatics, and Rhodians, and is often taken notice of by ancient writers. The Athenians, while they continued a free ſtate, were an active, induſtrious, and frugal people; very polite, and cultivated arts and ſciences beyond any other nation: but as they had powerful enemies, and were exceedingly jealous of their liberties, this preſerved them from luxury. Their way of ſpeaking was agreeable to their conduct; accurate and cloſe, but very expreſſive. The Aſiatics, on the other hand, were more gay and looſe in their manners, devoted to luxury and pleaſure; and accordingly they affected a florid and ſwelling ſtyle, filled with redundancies and ſuperfluities of expreſſion. The Rhodian ſtyle was a medium between theſe two; neither ſo conciſe and expreſſive as the Attic, nor ſo looſe and redundant as the Aſiatic. Quintilian ſays, it had a mixture

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mixture of its author, and the humour of the people; and, like plants set in a foreign soil, degenerated from the Attic purity, but not so wholly as to lose it. They first received it from Æschines, who being worsted in his famous contest with Demosthenes, retired thither, and taught them rhetoric.

251. The style of the same country likewise very much alters in different ages. Cicero tells us, that the first Latin historians aimed at nothing more than barely to make themselves intelligible, with as much brevity as possible. Those who succeeded them advanced a step further; and gave a better turn and cadency to their sentences, though still without ornament. But afterwards, when the Greek language became fashionable at Rome, by copying after Herodotus, Thucydides, Zenophon, and others, they gradually introduced all their beauties into their own tongue, which in Cicero's time was brought to its highest perfection. But it did not long continue in that state. A degeneracy of manners soon altered their state, and corrupted their language, which Quintilian very much regrets. The case was the same with respect to the Greek tongue; though its purity continued much longer than that of the Latin. Nor can any language be exempt from the common fate of all human productions; which have their beginning, perfection, and decay. Besides, there is a sort of *fashion* in language, and the generality of people are always fond of running into the mode. (See Language, *Sect.* VIII.) Cicero tells us, that the most ancient Greek orators whose writings were extant in his time, such as Pericles, Alcibiades, and others, were subtle, acute, concise, and abounded in sense rather than words. But another set that followed them, among whom were Critias, Theramenes, and Lysias, retained the good sense of the former, while they improved their style. After these came Isocrates, who added all the flowers and beauties of eloquence. And as he had many followers, they applied these ornaments and decorations according to their different genius; some by pomp and splendor, and others by greater force and energy. In this last way Demosthenes principally excelled. Afterwards they sunk into a softer and smoother manner, not less exact and florid, but more cold and lifeless. If we take a view of our own language, Chaucer seems to have been the first who made any considerable attempts to cultivate it. But whoever looks into his writings, will perceive the difference to be so great from what it is at present, that it scarce appears to be the same language. The gradual improvements it has since received, are evident in the writers of almost every succeeding age; and how much farther it may still be carried, time only can discover. See Language, *Sect.* IV—VIII.

252. Another cause of the variety of style arises from the different nature and properties of language. A difference in the letters, the form of the words, and the order of them, all affect the style. Quintilian observes, that the Latin tongue cannot equal the Greek in pronunciation, because it is harsher. The Latins want *υ*, one of the softest of the Greek vowels; and many Latin words end in *m*; a letter of broad and hollow sound, which never terminates any Greek word; but *ν* does frequently, whose sound is much softer and sweeter. Besides, in the combination of syllables, the letters *b* and *d* are often so situated, as to require too strong and unequal a force to be laid upon them, as in the words *obversus* and *adjungo*. Another advantage of the Greek tongue arises from the variety and different seat of the accents: for the Greeks often accent the last syllable, which both enlivens the pronunciation and renders it more musical; whereas the Latins never do this. But the greatest advantage of the Greeks lies in their plenty and variety of words; for which reason they have less occasion for tropes or circumlocutions, which, when used from necessity, have generally less force, and weaken the style. But under these disadvantages, Quintilian gives his countrymen the best advice the case will admit of: That what they cannot do in *words*, they should make up in *sense*. If their expressions are not so soft and tender, they should exceed in strength; if they are less subtile, they should be more sublime; and if they have fewer proper words, they should excel in the beauty as well as number of their figures. The Greek tongue surpassed the Latin in all these instances; and both of them seem to have great advantages over some modern languages, though this is disputed. (See Language, *Sect.* V. and VI.) But it is allowed that the ancient languages have a more equal mixture of vowels and consonants, which makes their pronunciation more easy and musical.

253. But the chief distinction of style arises from the different subjects of discourse. The same way of speaking no more suits all subjects, than the same garment would all persons and all ranks. The style therefore should always be adapted to the subject, which rhetoricians have reduced to three ranks: viz. the *low* or *plain* style, the *middle* or *temperate*, and the *lofty* or *sublime*: Which are likewise called *characters*, because they denote the quality of the subject upon which they treat. This division of style into three characters, was taken notice of very early by ancient writers. Some observe it even in Homer, who assigns the *sublime* to Ulysses, when he represents him so copious and vehement an orator, that his words came from him *like winter snow*; while he describes Menelaus as a *polite* speaker, but concise and *moderate*; and represents Nestor's manner as between these two, not so high as the one, nor so low as the other; but smooth, even, and pleasant, or, as he expresses it, *more sweet than honey*. Quintilian observes, that although accuracy and politeness were general characters of the Attic writers; yet among their orators, Lysias excelled in the *low and familiar* way; Isocrates for elegance, *smoothness*, and the *fine turn of his periods*; and Demosthenes for *flame and rapidity*, by which he carried all before him. And Gellius tells us, that the like difference was found in the three philosophers who were sent from the Athenians to Rome (before the Romans had any relish for the polite arts) to solicit the remittance of a fine laid upon them. Carneades was *vehement and rapid* in his harangues; Critolaus, *neat and smooth*; and Diogenes, *modest and sober*. The eloquence of these orators, and the agreeable variety of their manner,

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manner, so captivated the Roman youth, and inflamed them with such a love of the Grecian arts, that old CATO, who did all he could to check it by hurrying away the ambassadors, could not prevent their vigorous pursuit of them, till the study became in a manner universal. And the old philosopher himself afterwards learned the Greek language, when it became more fashionable; which Lord BACON styles *a punishment upon him for his former crime*. It seldom happens that the same person excels in each of these characters. They seem to require a different genius, and most orators are naturally led to one of them more than another; though all of them are requisite for an orator upon different occasions.

SECT. V. *Of the* LOW STYLE.

254. This may be considered under two heads, *thoughts* and *language*; in each of which the several characters are distinguished.

255. I. With respect to the former, as the subjects proper for this style are either common things, or such as should be treated in a familiar way; so plain thoughts are most suitable to it. By plain thoughts, are meant such as are simple and obvious, and seem to rise naturally from the subject; so that any one, upon first hearing them, would be apt to imagine they should have occurred to himself. For the more natural a thing is, the more easy it seems to be; though in reality it is often otherwise; and the perfection of art lies in its nearest resemblance to nature. This natural plainness and simplicity very much contributes to give credit to what is said. Nor is any thing more apt to impose on us, than the appearance of this, when artfully assumed. Cicero's account of the fight between Milo and Clodius, in which Clodius was killed, is a remarkable instance of this. (See *Orat. pro Milone*.)

256. But as things are sometimes best illustrated by their opposites, we shall mention a contary instance of a very affected and unnatural way of relating a fact. Val. Maximus tells us of a learned man at Athens, who, by a blow which he received by a stone upon his head, entirely forgot all his learning, though he continued to remember every thing else. And, in the course of his narrative, he talks of a "*direful* and *malignant wound* invading his mind, and surveying the knowledge repositted there, and *cruelly seizing* a particular part of it, and burying it with an *invidious funeral*. This affected nonsense has no small resemblance to a great deal of metaphorical bombast which we meet with in many of our modern publications. But there are two properties of plain thoughts, one of which ought constantly to attend them in common with all thoughts, and the other is often necessary to animate and enliven this character.

257. The former is justness and propriety. What Cicero says of the death of CRASSUS the orator, seems just and natural. "It was (says he) an affliction to his friends, a loss to his country, and a concern to all good men; but such public calamities followed upon it, that heaven seemed rather to have favoured him with death, than to have deprived him of life." This thought seems agreeable to the sentiments of a good man, as Crassus was; to choose death rather than to outlive the happiness of his country. Quintilian has a reflection upon a similar occasion, which is not so becoming, upon the death of his only son, a youth of very uncommon parts, and for whose use he had begun his *Institutions of Oratory*; but he died before they were finished. That seems to be a very natural as well as just thought of Pliny the Younger, when he says, "The death of those persons always appears to me too hasty and unseasonable, who are preparing some lasting work. For persons wholly devoted to pleasures, live, as it were, from day to day, and daily finish the end for which they live; but those who have a view to posterity, and to preserve their memory by their labours, always die untimely, because they leave something unfinished."

258. The other property, which should often accompany plain thoughts, is, that they be sprightly. This is necessary to enliven such discourses as require the low style. The fewer ornaments it admits of, the greater spirit and vivacity is requisite to prevent it from being dry and jejune. A thought may be very brisk and lively, and at the same time appear very natural. Such thoughts, attended with agreeable turns, are very suitable to this style; but care should be taken, lest, while fancy is indulged, the justness of them be overlooked.

259. II. As to the *language* proper for this style it ought to be agreeable to the thoughts, plain, simple, and unaffected.

260. The first thing is *elegance*, or a proper choice of words and expressions; which ought always to suit the idea they are designed to convey. To call ancient Rome *the mistress of Italy* would as much lessen the just notion of the extent of her power, as the Roman writers aggrandise it, when they style her *mistress of the world*. But purity, both in the choice of words and expressions, may be called *neatness in language*. And to be plain and neat at the same time, is very consistent. Perspicuity is always to be studied; but epithets should be sparingly used, as they contribute to heighten the style; though they are sometimes necessary to set a thing in its just light. Thus, in speaking of Xerxes, it would be too low to say, *He descended with his army into Greece*. Here is no intimation of their unparalleled numbers, which, Herodotus says, amounted to 9,317,000. Therefore, unless the number be mentioned, the least that can be said is, that *he descended with a vast army*.

261. The next thing is *composition*, which here does not require the greatest nicety. A seeming negligence is sometimes a beauty in this style, as being more natural. Short sentences, or those of a moderate length, are likewise best suited to this character. Long and accurate periods, finely wrought up with a gradual rise, harmonious numbers, &c. are improper, as they are the effect of art. Yet some proportion should be observed in the members, that neither the ears be disappointed, nor the sense obscured. Of this kind is that expression of a Greek orator, blamed by Demetrius: *Ceres came readily to our assistance, but Aristides not*. The latter clause is too short; and by dropping so suddenly, both disappoints the ear, and is obscure. It would have been more agreeable thus, *but Aristides did not come*. As to order, the plainest and

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and cleareſt diſpoſition, both of the words and members of ſentences, and what is moſt agreeable to the natural conſtruction, beſt ſuits with this character. With regard to the colliſion of ſyllables in different words, for preventing either hollowneſs or aſperity of ſound, greater liberty may be taken in this than in the other characters. Here it may be allowed to ſay, *Virtue is amiable to all, though all do not purſue it.* But in an higher character, to prevent the hollow ſound of the words *though all*, an orator would ſay, *though few purſue it.* So, *Xerxes' expedition* may be tolerable here; but, in the florid ſtyle, *the expedition of Xerxes* would ſound much better.

262. The laſt thing to be conſidered, is *dignity* or the uſe of tropes and figures. But tropes ought to be uſed cautiouſly, unleſs ſuch as are very common, and have either come into the place of proper words, or at leaſt are equally plain and clear. So Diodorus Siculus, ſpeaking of the forces of Xerxes, calls them an *innumerable company.* Where, by a *ſynecdoche*, he has uſed an uncertain number for a certain, as leſs liable to exception. As *verbal figures* ſerve chiefly to enliven an expreſſion, and give an agreeable turn, they are often not improper for this character. Nor are *figures of ſentences* wholly to be excluded, eſpecially ſuch as are chiefly uſed in reaſoning. But thoſe which are peculiarly adapted to touch the paſſions are more proper for the higher ſtyles.

263. Upon the whole, nature, without colouring or appearance of art, is the diſtinguiſhing mark of the low ſtyle. The deſign of it is to make things plain, and to ſet them in an eaſy light. And therefore the proper ſubjects of it are epiſtles, dialogues, philoſophical diſſertations, or other diſcourſes that ought to be treated in a plain and familiar manner, without much ornament or addreſs to the paſſions. A freedom and eaſe both in thought and expreſſion, attended with an agreeable humour and pleaſantry, are its peculiar beauties. This ſtyle, however, has its difficulties, which are not ſo eaſily diſcerned but from experience. For it requires no ſmall ſkill to treat a common ſubject in ſuch a manner as to make it entertaining. The fewer ornaments it admits of, the greater art is neceſſary to attain this end. Being in a great meaſure ſtripped of the advantages of the other ſtyles, it has little to recommend it, beſides its own native beauty and ſimplicity.

SECT. VI. *Of the* MIDDLE STYLE.

264. IN treating of this character, we muſt conſider firſt the *matter*, and then the *language* proper for it.

265. I. As the ſubjects proper for this ſtyle are things of weight and importance, which require both a gravity and accuracy of expreſſion; ſo fine thoughts are its diſtinguiſhing mark. A fine thought may deſerve that character from the following properties:

266. (1.) *Gravity* and *dignity.* Thus Cicero, in a ſpeech to Cæſar, ſays, "It has been often told me, that you have frequently ſaid, you have lived long enough for yourſelf. I believe it, if you either lived, or was born for yourſelf only." Nothing could either be more fit and proper, or a finer compliment to Cæſar.

267. (2.) Another property of a fine thought is *beauty* and *elegance.* It is a fine compliment which PLINY pays to TRAJAN, when he ſays, "It has happened to you alone, that you was father of your country before you was made ſo." And of the ſame kind is that of Cicero to Cæſar, when he ſays, "You, Cæſar, are wont to forget nothing but injuries." The beauty of a thought may give us delight, though the ſubject be ſorrowful; and the images of things in themſelves unpleaſant may be ſo repreſented as to become agreeable. Siſigambis, the mother of Darius, after the death of her ſon, had been treated by Alexander with the greateſt regard and tenderneſs. So ſoon as ſhe heard, therefore, that he was dead, ſhe could not bear to outlive him. Upon which Q. Curtius makes this fine reflection: "Though ſhe had courage to ſurvive Darius, yet ſhe was aſhamed to outlive Alexander."

268. (3.) The next property of a fine thought is *delicacy.* As, in the objects of our ſenſes, thoſe things are ſaid to be delicate which affect us gradually in a ſoft and agreeable manner; ſo a delicate thought is that which is not wholly diſcovered at once, but, by degrees unfolding itſelf, diſcloſes more than was at firſt perceived. Quintilian refers to this, when he ſays, "Thoſe things are grateful to the hearers, which when they apprehend, they are delighted with their own ſagacity; and pleaſe themſelves, as though they they had not heard, but diſcovered them."

269. (4.) The laſt property of a fine thought, is *novelty.* Mankind are naturally pleaſed with new things; and when they are ſet in an agreeable light, this very much heightens the pleaſure. Even where a thing hath been ſo well ſaid already, that it cannot eaſily be mended, the revival of a fine thought often affords entertainment to the mind, though it has no longer the claim of novelty. Cicero, in his treatiſe of an orator, among ſeveral other encomiums which he gives to Craſſus, ſays of him, "Craſſus always excelled every other perſon, but that day he excelled himſelf." He means as an orator. This thought has been repeated in various forms, and applied to different perſons, by Varro, Pliny, Cicero, &c. as well as by ſome modern writers.

270. II. Of the *language* proper for the middle ſtyle, in general, it may be obſerved, that as the proper ſubjects of it are things of weight and importance, though not of that exalted nature as wholly to captivate the mind, and divert it from attending to the diction; ſo all the ornaments of ſpeech, and beauties of eloquence, have place here.

271. With regard to *elegance*, ſometimes one ſingle word adds a grace and weight to an expreſſion, which, if removed, the ſenſe becomes flat and lifeleſs. Such words as are moſt full and expreſſive ſuit beſt with this character. Proper epithets, alſo, ſerve much to enliven it. The moſt accurate compoſition, in all the parts of it, has place here. Periods, the moſt beautiful and harmonious, of a due length, and wrought up with the moſt exact order, juſt cadency, eaſy and ſmooth connection of the words, and flowing numbers, are the genuine ornaments which contribute to form this character.

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272. But

272. But the principal diſtinction of ſtyle ariſes from *tropes* and *figures*. By theſe it is chiefly animated and raiſed to its different degrees or characters, as it receives a leſſer or greater number of them; and theſe either more mild, or ſtrong and powerful. As to tropes, thoſe which afford the moſt lively and pleaſing ideas, eſpecially metaphors, ſuit the middle character. A pretty remark has been made by ſome critics upon two verſes of Virgil; the one in his Eclogues, and the other in his Georgics. The former is for the moſt part written in the low ſtyle, as the language of ſhepherds ought to be; but the latter in the middle ſtyle, ſuitable to the ſubject and the perſons for whom it is deſigned; the greateſt men in Rome not thinking it below them to entertain themſelves with rural affairs. In the Eclogue, the ſhepherd, complaining of the barrenneſs of his land, ſays,

Infelix lolium et ſteriles naſcuntur avenæ.

Wild oats and darnel grow inſtead of corn.

But in the Georgic, where the ſame ſenſe is intended, inſtead of the proper word *naſcuntur, grow*, the author ſubſtitutes a metaphor, *dominantur, command*, and ſays,

Infelix lolium et ſteriles dominantur avenæ.

Where corn is ſown, darnel and oats command. It was natural for the ſhepherd to expreſs his ſenſe in the plaineſt terms: But in the Georgic, where the poet ſpeaks in his own perſon, the metaphor is beautiful, and agreeable to the dignity of the work. This inſtance may ſhow how the ſtyle is heightened by tropes, and the ſame thought may be accommodated to the ſeveral characters of ſtyle by the different manner of expreſſion.

273. The like may alſo be ſaid of *figures* either of words or ſentences, in reference to this character; which admits of the fineſt deſcriptions, moſt lively images, and brighteſt figures, that ſerve either for delight, or to influence the paſſions without tranſport or ecſtaſy, which is the property of the ſublime. This is indeed the proper ſeat of ſuch embelliſhments, which ſupport and make up a principal part of the middle or florid ſtyle. We need here only mention ſome of the moſt conſiderable.

274. DESCRIPTIONS are not only a great ornament to a diſcourſe, but repreſent things in a very lively and agreeable manner. In what a beautiful light has Cicero placed the polite arts and ſciences, when, deſcribing them from their effects, he thus repreſents the advantages and pleaſure they afford? "Other ſtudies neither ſuit with all time, nor all ages, nor all places; but theſe improve youth, delight old age, adorn proſperity, afford a refuge and ſolace in adverſity; pleaſe at home, are no hinderance abroad; ſleep, travel, and retire with us."

275. PROSOPOPEIA is another ſtrong and beautiful figure, very proper for this character. Seneca has a fine inſtance of it in his *Conſolatory letter to Marcia* upon the death of her ſon. After many arguments uſed to alleviate her grief, he at laſt introduces her father, Cremutius Cordus, as thus addreſſing her: "Daughter, why do you ſo long indulge your grief? why are you ſo ignorant, as to think it unhappy for your ſon, that, weary of life, he has withdrawn himſelf to his anceſtors? Are you not ſenſible what diſorders fortune occaſions everywhere? Need I mention to you princes who would have been extremely happy, had a more timely death ſecured them from impending evils? or Roman generals, who wanted nothing to conſummate their glory, but that they lived too long? Why then is he bewailed longeſt in our family who died moſt happily?"

276. SIMILITUDES and COMPARISONS are another great ornament of this ſtyle. Nothing can be finer than the compariſon between thoſe two great orators, DEMOSTHENES and CICERO, made by Quintilian, when he ſays, "Demoſthenes and Cicero differ in their elocution; one is more cloſe, and the other more copious; the former concluded more conciſely, and the latter takes a larger compaſs; the one always with pungency, and the other generally with weight; one can have nothing taken from him, and the other nothing added to him; the latter has more of art, and the former more of nature. But this muſt be allowed to Demoſthenes, that he made Cicero in a great meaſure what he was. For, as Tully gave himſelf wholly to an imitation of the Greeks, he ſeems to me to have expreſſed the force of Demoſthenes, the fluency of Plato, and the pleaſantry of Iſocrates." Similitudes taken from natural things ſerve alſo very much to enliven the ſtyle.

277. ANTITHESIS, or *oppoſition*, both in the words and ſenſe, has often the like beautiful effect. There is an agreeable contraſt in that paſſage of Seneca: "Cæſar does not allow himſelf *many* things, becauſe he can do *all* things; his watching defends all others ſleep, his labour their quiet, his induſtry their pleaſure, his buſineſs their eaſe; ſince he has governed the world, he has deprived himſelf of it."

SECT. VII. *Of the* SUBLIME STYLE.

278. THE SUBLIME is the moſt noble, as well as the moſt difficult, part of an orator's province. It is this principally which Cicero requires in his perfect orator, whom he could not deſcribe in words, but only conceive of in his mind. And indeed, the nobleſt genius and greateſt art are both requiſite to form this character. For where nature has been moſt liberal in furniſhing the mind with lofty thoughts, bright images, and ſtrong expreſſions; yet without the aſſiſtance of art there will ſometimes be found a mixture of what is low, improper, or miſplaced. And a great genius, like a too rich ſoil, muſt produce flowers and weeds promiſcuouſly, without cultivation. But the juſteſt propriety, joined with the greateſt ſtrength and higheſt elevation of thought, are required to complete the true ſublime. Art therefore is neceſſary, to regulate the taſte of thoſe who are deſirous to excel in this character.

279. In explaining the nature and properties of this character, we ſhall conſider firſt the *thoughts*, and then the *language*, in each of which it is diſtinguiſhed from the two former.

§ I. *Of the* SUBLIME, *as it relates to* THOUGHTS.

280. LOFTY and grand ſentiments are the baſis and foundation of the true ſublime. LONGINUS therefore adviſes thoſe who aſpire at this excellence, to accuſtom themſelves to think upon the nobleſt ſubjects. A mind that always dwells upon low and common ſubjects can never raiſe itſelf ſufficiently

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sufficiently to represent things great and magnificent, in their full extent and proper light. But he who inures himself to conceive the highest and most exalted ideas, and renders them familiar to his thoughts, will not often be at a loss how to express them; for where proper words are wanting, by metaphors and images taken from other things, he will be able to convey them in a just and adequate manner. Noble and lofty thoughts are principally those which either relate to divine objects, or such things as among men are generally esteemed the greatest and most illustrious.

281. Of the former sort is that of Homer, when, describing the goddess Discord, he says, that she

Walks on the ground and hides her head in clouds.

This stretch of thought, says Longinus, as great as the distance between heaven and earth, does not more represent the stature of the goddess, than the measure of the poet's genius and capacity. But such images, however beautiful in poetry, are not so proper for an orator, whose business it is to make choice of those which are suited to the nature of things, and the common reason of mankind. That sentiment is equally just and noble, with which Cicero endeavours to inspire the members of a community, in his treatise *Of Laws*, when he says, that "Citizens ought first to be persuaded, that all things are under the government of the gods; that every affair is directed by their wisdom and power; that the highest regard is due to them from men, since they observe every one's conduct, how he acts and behaves himself, and with what temper and devotion he worships them; and that they make a difference between the pious and impious." And what he says to Cæsar is no less in this style, when, interceding for Ligarius, he tells him, that "men in nothing approach nearer to deity, than in giving life to men."

282. The other kind of lofty thoughts are those which relate to power, wisdom, courage, beneficence, and such other virtues as are of the highest esteem among mankind. "Your fortune (says Tully to Cæsar) has nothing greater than a power, nor your nature than a will, to save many." Velleius Paterculus, as if he thought no encomium too high for this great orator, laments his unhappy fate in these lofty strains addressed to M. Antony, by whose order he was put to death: "You have taken from Cicero old age, and a life more miserable than death under your government; but his fame, and the glory of his actions and words, you have been so far from destroying, that you have increased them. He lives, and will live in the memory of all ages; and while this system of nature, however constituted, shall remain, the praise of Cicero shall accompany it; and all posterity, while it admires his writings against you, will curse your treatment of him; and sooner shall mankind be lost to the world than his name."

283. But the true sublime is consistent with the greatest plainness and simplicity of expression. And, generally speaking, the more plain and natural the images appear, the more they surprise us. How succinct, and yet how majestic, is that expression of Cæsar upon his victory over Pharnaces! *I came, I saw, I conquered.* But there cannot be a greater or more beautiful example of this, than what Longinus has quoted from Moses. "The legislator of the Jews (says he), no ordinary person, having a just notion of the power and majesty of the Deity, has expressed it in the beginning of his laws in the following words: *And God said*—what?—*Let there be light; and there was light. Let the earth be made; and it was made.* This instance from the divine writer, and the character here given of him by that excellent critic, is the more remarkable, as he was himself a Pagan. To command nature into being by a *word*, represents it at once altogether boundless and unlimited.

284. It sometimes very much contributes to heighten the image of a thing, when it is expressed in so undetermined a manner, as to leave the mind in suspense what bounds to fix to the thought. Of this kind is that of Cicero, when he first raises an objection against the necessity of an acquaintance with polite literature in order to form a great man, and then answers it. "I acknowledge, (says he), that nature, without learning, has frequently contributed more to honour and virtue, than learning where a genius has been wanting: But yet I must say, that where the direction and improvement of learning is added to a great and excellent genius, it is wont to produce something admirable and singular, which I know not how to describe."

§ II. *Of the* Sublime *with regard to* Language.

285. This branch of our subject comprehends 3 heads; *Elegance, Composition*, and *Dignity*.

286. I. *Elegance.* Those words and expressions chiefly contribute to form the sublime which are most sonorous, and have the greatest splendor, force, and dignity. Long words, when equally expressive, are rather to be chosen than short ones, especially monosyllables. Thus, to conquer or vanquish an enemy, has a fuller and more grand sound, than to beat an enemy. Compound words are also often preferable to simple ones. So if we say, *Cæsar's army, when he was present, was always invincible*; this manner of expression has more sublimity in it, than if we should say, *Cæsar's army, when he was present, could never be conquered.* The use of proper epithets also contributes very much to this character. Thus, when the character of *divine poet* is given to Homer or Virgil, or *prince of orators* to Demosthenes or Cicero; it conveys to the mind the most sublime ideas of them.

287. II. *Composition.* The force of this, as Longinus observes, is so great, that sometimes it creates a kind of sublime where the thoughts themselves are but mean, and gives a certain appearance of grandeur to that which otherwise would seem but common. But composition consists of several parts; the first of which is *period*. Sublimity arises from the several parts of a period so connected as to give force, as well as beauty, to the whole. The periods, therefore, should be of a proper length. If they are too short, they lose their grandeur, and are gone almost before they reach the ear; as, on the contrary, when they are too prolix, they lose their force by becoming heavy and unwieldy. The next thing is the order and disposition of the several words and members of a sentence. The different placing but of one or

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or two words will ſometimes wholly deſtroy the grandeur of a ſentence, and make it extremely flat. And in placing the ſeveral parts or members, they ought to be ſo diſpoſed, that what is moſt weighty and important ſhould ſtand laſt. Thus Tully ſays of Catiline, "We ought to return thanks to heaven, that we have ſo often eſcaped ſo odious, ſo frightful, ſo dangerous a plague of the ſtate." Another thing is the connection of the words with regard to the ſound; that the pronunciation, in paſſing from one to another, may be moſt agreeable to the ear, and beſt ſuited to the nature of the ſubject. Such a contexture of them, as will give the greateſt force and energy to the expreſſion, is moſt proper for the ſublime. Soft and languid ſounds are very unſuitable to this character. In this reſpect, our tongue, by its multitude of conſonants, is more ſuitable for ſublime diſcourſes, than ſome other modern languages, which abound with vowels.

288. III. The laſt head is the proper uſe of tropes and figures; which is here ſo neceſſary, that the title of *dignity* ſeems to have been given to this part of elocution, from the aſſiſtance it more eſpecially affords to this character. For if, as Longinus ſays, compoſitions ſometimes create a ſort of ſublimity; this much oftener happens from the force and efficacy of ſome lively tropes and ſtrong figures.

289. As to TROPES, bright metaphors are peculiarly ſuited to raiſe and animate the ſtyle. This is manifeſt from their nature, as they conſiſt of ſimilies, reduced to a ſingle word; which, if taken from things lofty and grand, muſt of conſequence give a ſublimity to the ſtyle. What can ſuggeſt to us a greater idea of the valour of Ajax, than Homer's calling him *the bulwark of the Greeks?* A number of theſe, well choſen, contribute no leſs to the grandeur than to the beauty of diſcourſe. Hyperbole ſometimes gives the ſame force to an expreſſion, if cautiouſly uſed, ſo as not to exceed all appearance of truth. But the chief uſe of it is, where proper words will not expreſs the juſt idea of the thing deſigned to be conveyed; and it may ſeem rather the offspring of neceſſity than choice. Of this nature is that of Herodotus, when, ſpeaking of the Lacedæmonians at Thermopylæ, he ſays, "They defended themſelves with the ſwords they had left, and even with their *hands* and *teeth*, till the barbarians *buried them under their arrows.*"

290. As to FIGURES, whether verbal or thoſe which conſiſt in the ſenſe, the nature of this character will eaſily direct to ſuch as are moſt proper. But poets take greater liberties in the uſe of them than would be allowed to an orator. The orator's uſe of them being to ſet things in a ſtronger and clearer light, they are more ſedate and moderate. An orator ſcarce ever has occaſion for ſuch fictitious images as we often meet with in poetry. We ſhall juſt mention the chief of thoſe figures which ſeem beſt ſuited for this purpoſe.

291. i. *Deſcription.* Of this JUSTIN gives us a fine inſtance, in a ſpeech of Philip V. of Macedon, wherein he repreſents the neceſſity of falling upon the Romans, who were then engaged in a war with Hannibal. "I behold a cloud of a moſt dreadful and bloody war riſing in Italy. I ſee a ſtorm of thunder and lightning from the weſt, which will overſpread all places with a vaſt ſhower of blood, into whatever country the tempeſt of victory ſhall drive it. Greece has undergone many violent ſhocks in the Perſian, Gallic, and Macedonian wars; but theſe would all be found unworthy of regard, if the armies now engaged in Italy ſhould march out of that country. I view the terrible and cruel wars which involve thoſe nations, through the courage of their forces, and ſkill of their generals. This rage and fury cannot ceaſe by the deſtruction of one party, without the ruin of their neighbours. Indeed, Macedon has leſs reaſon to dread the ſavage conquerors than Greece, becauſe more prepared, and better able to defend itſelf; but I am ſenſible, thoſe who attack each other ſo impetuouſly will not confine their victories within thoſe bounds, and that it will be our lot to engage the conquerors."

292. ii. *Enumeration* has ſome affinity with the former figure; by which, if the ſeveral parts have each ſomething grand in them, the whole, when brought together, and diſpoſed in a juſt order, very much contributes to the ſublimity. There is a beautiful example in *Burnet's Theory of the Earth*, containing a deſcription of our globe, upon a ſurvey of it after the general conflagration, which he repreſents in a ſtrong light; and wherein the particulars conſidered ſeparately are all truly great and noble, and every way ſuited to the nature of the ſubject, as they both enlarge the idea, and heighten the image, of that grand cataſtrophe. But it is too long to be quoted.

293. iii. *Similitude* ſerves very much for beauty and ornament; and, when taken from great and ſublime objects, adds a grandeur and magnificence to the things illuſtrated by it. Longinus, who has treated upon the ſublime in a ſtyle every way ſuited to the ſubject, gives an example when, comparing thoſe two great works of Homer, his ILIAD and ODYSSEY. He thus deſcribes them: "HOMER compoſed his Iliad when his mind was in its full ſtrength and vigour; the whole body of the poem is dramatic, and full of action; whereas the beſt part of the Odyſſey is taken up in narrations, which ſeem to be the genius of old age. So that one may compare him in this latter work to the ſetting ſun, which ſtill appears with the ſame magnificence, but has no longer the ſame heat and force." And ſoon after, ſpeaking of the Odyſſey, he ſays, "That piece may be called the reflux of his genius, which, like the ocean, ebbs and deſerts its ſhores." Comparing thoſe two great orators Demoſthenes and Cicero, he ſhows the ſame ſublimity of thought: "DEMOSTHENES (ſays he) is ſublime, in that he is cloſe and conciſe; Cicero, in that he is diffuſe and extenſive. The former, by reaſon of the violence, rapidity, ſtrength, and fury, with which he rages and bears all before him, may be compared to a tempeſt and thunder; but the latter, like a great conflagration, devours and conſumes all he meets, with a fire that is never extinguiſhed, but wherever it advances, continually gathers new ſtrength."

294. iv. *Antitheſis*, or a ſentence conſiſting of *oppoſite parts*, has often the ſame effect; as in the

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following inſtance of Cicero, where his view is to repreſent Pompey as a moſt conſummate general. "Who," ſays he, "ever was, or need be more knowing than this man? who, from his childhood and inſtructions at ſchool, went into the army of his father, and learned the military art in a very great war againſt the fierceſt enemies; who, while yet a boy, became a ſoldier under the greateſt general; and, when but a youth, was himſelf commander of a very great army; who has oftener engaged with the enemy in battle, than any other perſon with his adverſary in private conteſts; has waged more wars than others have read, and conquered more provinces than others have wiſhed to govern; whoſe youth has been ſpent in acquiring the art of war, not by the precepts of others, but his own commands; not by defeats, but victories; not by campaigns, but triumphs."

295. v. *Apoſtrophe.* Amongſt the articles charged againſt Demoſthenes by his great adverſary and rival Æſchines, one was, that he had adviſed the Athenians to engage in a war againſt king Philip, wherein they had received a very great defeat. When Demoſthenes comes to anſwer that part of the charge, he, in a ſort of rapture, appealing to the deceaſed defenders of their country, ſays, "No, my fellow citizens, you have not done wrong, you have not; I proteſt by the ghoſts of thoſe great men who have fought for the ſame cauſe in the plains of Marathon." By this appeal to thoſe ancient worthies whoſe memories were in the higheſt eſteem at Athens, that it was the cauſe, and not the ſucceſs, which rendered their actions ſo glorious, he artfully corroborates his aſſertion in a way which he knew muſt have the greateſt weight with his audience.

296. As the proper ſubjects of this character are either divine things, or ſuch as are in the higheſt eſteem and regard among mankind, which often require laudatory diſcourſes, or panegyric, theſe admit of all the ornaments of eloquence; which, however, muſt be uſed with diſcretion; for when the mind is ſtretched to the utmoſt of its power in the purſuit of a ſublime idea, it cannot attend to all the leſſer fineries of language; but from its own vigour, will be led to expreſs them in terms the moſt emphatical, and beſt ſuited to their nature. In ſuch caſes, therefore, the ſublimity muſt appear rather from the elevation of the thought, attended with a ſimplicity of expreſſion, than from the ornaments and dreſs of the language; though, upon the whole, grandeur and majeſty of expreſſion is the proper mark of this character with relation to the language.

Sect. VIII. *Of the* Style *of an* Orator.

297. The ſtyle of an orator comprehends all the characters already explained, of *low*, *middle*, and *ſublime*, as they are applied by him in the different parts of his province. For the language muſt be ſuited to the ſubject, and the different views of the ſpeaker neceſſarily occaſion a variety in the manner of expreſſion. Now an orator has 3 objects in view, to prove what he aſſerts, to repreſent it in an agreeable light, and to move the paſſions. Each of theſe parts of his province requires a different ſtyle. The *low ſtyle* is moſt proper for proof and information; the *middle ſtyle* is beſt ſuited for pleaſure and entertainment; but the *ſublime* is neceſſary to influence the paſſions. Here the orator calls in all the aſſiſtance of nature and art; the moſt raiſed and lofty thoughts, clothed with the brighteſt and ſtrongeſt colouring, enter into this character.

298. As ſhort periods are proper in the *low ſtyle*, ſo leſs care is neceſſary in their turn and cadency. But the words ſhould be well choſen and proper, ſuited to the ideas they are deſigned to convey; the expreſſions plain and clear, and the artificial ornaments few and modeſt. Bold or lofty metaphors, or in which the alluſion is dark and remote, ought to be avoided. Of theſe, ſuch as come neareſt to the natural way of expreſſion are moſt proper for this ſtyle.

299. As the *middle ſtyle* is more adapted for pleaſure and delight, it admits of all thoſe beauties and ornaments which ſooth and entertain the mind. It has more force and energy than the low ſtyle, but leſs than the ſublime. Smooth and harmonious numbers, well-turned periods, of a juſt length, delightful cadency, and accurate diſpoſition of the words, are ſuited to this ſtyle. The moſt beautiful and ſhining tropes, which ſtrike the fancy, and all thoſe figures which, by repetition, ſimilitude, or proportion of ſounds, pleaſe and gratify the ear, help to form this character.

300. But it is the *ſublime ſtyle* which perfects the orator. This requires the moſt forcible and emphatical words, the boldeſt metaphors, and ſtrongeſt figures. In verbal figures, repetitions, ſynonymes, gradations, contraries, with others of a like force and energy, are chiefly employed here. But figures of ſentences are the moſt conſiderable, and principally contribute to make up this character. Among theſe are ſimilies taken from lofty ſubjects, proſopopœia, apoſtrophe, exclamation, epiphonema, apoſiopeſis, and others of a like nature. But due care muſt be taken of the form, conſtruction, and harmony of the periods; which ſeem beſt diſpoſed, when long and ſhort ones are intermixed. For though round and ſwelling periods carry in them ſomething grand and majeſtic, yet they often move too ſlow to ſtrike the paſſions; whereas ſhort ones are more acute and pungent, and, by returning quick, awaken the mind, and raiſe the paſſions. But to render it complete, it muſt be ſupported with ſtrong reaſon, grandeur of thought, and ſentiments every way equal to the expreſſion; without which it will be liable to ſwell into bombaſt.

301. It is unneceſſary here to repeat what has been already ſaid, reſpecting the various parts of a juſt oration; viz. The *Introduction*, *Narration*, *Propoſition*, *Confirmation*, *Confutation*, and *Concluſion*. See *Part* II. *Sect.* I—IV.

302. All the variety above mentioned, however, is not always neceſſary. Regard muſt be had to the nature of the ſubject, the time, place, perſons, and other circumſtances; by all which the ſtyle is to be regulated. Cicero refers us to ſome diſcourſes of his own, as inſtances of each kind. His oration for Cæcina, he ſays, is written in the low ſtyle; that for the Manilian law in the middle ſtyle, and that for Rabirius in the ſublime; and his orations againſt Verres and ſome others are the patterns of the variety here mentioned.

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And he gives us a very comprehenſive deſcription of a perfect orator in a few words, when he ſays: "He is one who can ſpeak upon a low ſubject acutely, upon a lofty ſubject with ſublimity, and upon a moderate ſubject temperately." But although he mentions ſeveral among the Greeks, and ſome few among the Romans, who excelled in one or other of theſe different kinds; yet one who excelled in them all, he ſuppoſes never to have exiſted. Each of them ſeems to require a very different genius, ſo that it is ſcarce poſſible for the ſame perſon to ſucceed in them all. It is therefore beſt for every one to purſue that which his genius ſeems moſt inclined to.

PART IV.

OF PRONUNCIATION.

SECT. I. *Of* PRONUNCIATION *in* GENERAL.

303. PRONUNCIATION is alſo called ACTION by ſome of the ancients: Though, if we attend to the proper ſignification of theſe words, the former reſpects the voice, and the latter the geſtures and motions of the body. But if we conſider them as ſynonymous terms, in this large ſenſe pronunciation or action may be ſaid to be a *ſuitable conformity of the voice, and the ſeveral motions of the body, in ſpeaking, to the ſubject matter of the diſcourſe.*

304. The beſt judges among the ancients have repreſented this as the principal part of an orator's province, whence he is chiefly to expect ſucceſs in the art of perſuaſion. When Cicero, in the perſon of Craſſus, has largely and elegantly diſcourſed upon all the other parts of oratory, coming at laſt to ſpeak of this, he ſays: "All the former have their effect as they are pronounced. It is the action alone that governs in ſpeaking; without which the beſt orator is of no value, and is often defeated by one, in other reſpects, much his inferior." And he ſays, that Demoſthenes was of the ſame opinion, who, when he was aſked what was the principal thing in oratory, replied *Action;* and being aſked again a 2d and a 3d time, what was next conſiderable, he ſtill made the ſame anſwer; by which he intimated, that the whole art did in a manner conſiſt in it. And indeed, if he had not judged this highly neceſſary for an orator, he would ſcarcely have taken ſo much pains in correcting thoſe natural defects, under which he laboured at firſt, in order to acquire it. (See DEMOSTHENES.)

305. Nor was he leſs careful in endeavouring to gain the habit of a becoming and decent geſture; for which purpoſe he uſed to pronounce his diſcourſes alone before a large glaſs. Such pains did this prince of the Grecian orators take to remove thoſe difficulties, which would have been ſufficient to have diſcouraged an inferior genius. To how great a perfection he arrived in his action, under all theſe diſadvantages, by his indefatigable diligence, is evident from the confeſſion of his great adverſary and rival in oratory, ÆSCHINES; who, when he could not bear the diſgrace of being worſted by Demoſthenes in the cauſe of Ctelphon, retired to Rhodes. And being deſired by the inhabitants to recite to them his own oration upon that occaſion, which, accordingly, he did the next day, they requeſted of him to let them hear that of Demoſthenes; which having pronounced in a moſt graceful manner, to the admiration of all preſent, "How much more (ſays he) would you have wondered, if you had heard him ſpeak it himſelf!" Quintilian ſays, that "it is not of ſo much moment what our compoſitions are, as how they are pronounced; ſince it is the *manner* of the delivery by which the audience is moved." And therefore he aſſerts, that "an indifferent diſcourſe, aſſiſted by a lively and graceful action, will have greater efficacy than the fineſt harangue, which wants that advantage."

306. The truth of this ſentiment of the ancients concerning the power of pronunciation, might be proved from many inſtances. HORTENSIUS, a cotemporary with Cicero, and, while living, next to him in reputation as an orator, was highly applauded for his action. But his orations after his death, as Quintilian tells us (for there are none extant), did not appear anſwerable to his character; whence he concludes, there muſt have been ſomething pleaſing when he ſpoke, by which he gained his character, which was loſt in reading them. But Cicero himſelf affords a deciſive inſtance of this. After the death of Pompey, when Cæſar had got the government into his own hands, many of his acquaintance interceded with him in behalf of their relations and friends, who had been of the contrary party in the late wars. Among others, Cicero ſolicited for his friend Ligarius; which Tubero underſtanding, who owed Ligarius a grudge, he oppoſed it, and undertook to repreſent him to Cæſar as unworthy of his mercy. Cæſar, himſelf was prejudiced againſt Ligarius; and therefore, when the cauſe was to come before him, he ſaid, "We may venture to hear Cicero diſplay his eloquence; for I know the perſon he pleads for to be an ill man, and my enemy." But, in the courſe of his oration, Cicero ſo worked upon his paſſions, that, by the frequent alteration of his countenance, the emotions of his mind were very conſpicuous. And when he came to touch upon the battle of Pharſalia, which had given Cæſar the empire of the world, he repreſented it in that moving and lively manner, that Cæſar could no longer contain himſelf, but was thrown into ſuch a fit of ſhivering, that he dropped the papers which he held in his hand. This was the more remarkable, becauſe Cæſar was himſelf one of the greateſt orators of that age, knew all the arts of addreſs and avenues to the paſſions, and conſequently was better prepared to guard againſt them. But neither his ſkill, nor reſolution, was of ſufficient force againſt the power of oratory; but the conqueror of the world became a conqueſt to the charms of Cicero's eloquence; ſo that contrary to his intention, he pardoned Ligarius. That oration is ſtill extant, and appears exceedingly well calculated to touch the tender paſſions; but we believe it can ſcarce be diſcernible to any in reading it, how it ſhould have had ſo ſurpriſing an effect; which muſt therefore have been chiefly owing to the wonderful addreſs and manner of the ſpeaker.

307. The more natural the pronunciation is, it will be the more moving. And therefore the ancients

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cients make it one qualification of an orator, that he be a good man; becauſe a perſon of this character will make the cauſe he eſpouſes his own, and the more ſenſibly he is touched with it himſelf, his action will be the more natural, and thus the more eaſily affect others. Cicero ſays, "It is certain that truth in every thing excels imitation; but if that was ſufficient of itſelf in action, we ſhould have no occaſion for art." In his opinion, therefore, art, if well managed, will aſſiſt and improve nature. "Sometimes the force of it is ſo great, that, even where it is wholly counterfeit, it will work the ſame effect as if it were founded in truth. This is well known to thoſe who frequent the theatre. In tragedies, though we know that every thing we ſee and hear is feigned, yet ſuch is the power of action, that we are often affected by it as deeply as if they were all realities. Anger and reſentment at the appearance of cruelty, concern and ſolicitude for diſtreſſed virtue, riſe in our breaſts; and tears are extorted from us for oppreſſed innocence. If art then has ſo great an influence upon us when ſupported by imagination, how powerful muſt be the effect of a juſt and lively repreſentation of what we know to be real?"

308. A warmth of expreſſion and vehemency of motion ſhould riſe in proportion to the importance of the ſubject and concern of the ſpeaker. The learned author of *Dialogues of Eloquence*, (p. 92) ſays, "The Romans had a very great talent this way, and the Greeks a greater. The eaſtern nations excelled in it, and particularly the Hebrews. Nothing can equal the ſtrength and vivacity of the figures they employed in their diſcourſe; and the very actions they uſed to expreſs their ſentiments, ſuch as putting aſhes on their heads, tearing their garments, and covering themſelves with ſackcloth under any deep diſtreſs and ſorrow of mind."

309. As action therefore was judged ſo neceſſary a qualification in an orator among the ancients, ſo they made uſe of ſeveral methods and expedients for the better attaining it. The principal of theſe we ſhall briefly mention:

310. *Decency* of pronunciation is an habit. And as all habits are gained by time, ſo the ſooner they are learned, they are generally acquired with the greater eaſe. Quintilian was ſo ſenſible of this, that in order to have perſons trained up to it, he begins with them in their childhood, and even gives directions how they ſhould be taught to pronounce, when they firſt learn to read. And he adviſes, that they ſhould then be inſtructed where to ſuſpend their voice, and make the proper pauſes; when to raiſe or ſink their voice, or give it a proper inflection; to be ſlower or faſter, more vehement or ſedate, as the nature of the ſubject may require; and that the tone of their voice be always manly and grave, but at the ſame time mixed with an agreeable ſweetneſs.

311. The ancients likewiſe had perſons whom they called PHONASCI, whoſe proper buſineſs was to teach them how to regulate their voice; and others, who inſtructed them in the whole art of pronunciation, both as to their voice and geſtures. Theſe laſt were generally taken from the theatre, being eminent experienced actors.

312. But though they made uſe of actors to inſtruct their youth in forming their ſpeech and geſtures, yet the action of an orator was very different from that of an actor. Cicero repreſents this diſtinction, when, ſpeaking of an orator, he ſays, "the motions of the body ought to be ſuited to the expreſſions, not in a theatrical way, mimicking the words by particular geſticulations, but in a manner expreſſive of the general ſenſe, with a ſedate and manly inflection of the ſides; not taken from the ſtage and actors, but from the exerciſe of arms and the paleſtra." And Quintilian ſays, "Every geſture and motion of the comedians is not to be imitated, nor to the ſame degree." When thus far prepared, they were ſent to the ſchools of the rhetoricians, to cultivate their ſtyle, and acquire the whole art of eloquence; particularly a juſt and accurate pronunciation. And as the Greeks were moſt celebrated for their ſkill in oratory, the Roman gentry and nobility generally ſent their ſons abroad, under the tuition of ſome Grecian maſter. Thus Cicero was ſent to Rhodes, to ſtudy under the famous Molo, and Brutus under Pammenes; Cæſar was going to the ſame place when taken by pirates; and Auguſtus afterwards ſtudied there under Apollodorus.

313. Nor, after all this pains and induſtry, did they yet think themſelves ſufficiently qualified to take upon them the character of orators, till they got together their friends who were judges of ſuch performances, and declaimed before them in private. Theſe perſons made obſervations on their language and pronunciation, and remarked any thing they thought improper, in their method, ſtyle, voice, or action. This gave them an opportunity to correct any defects at firſt, before they became habitual.

SECT. II. *Of the* VOICE.

314. The influence of ſounds, either to raiſe or allay our paſſions, is evident from muſic. And certainly the harmony of a fine diſcourſe, gracefully pronounced, is as capable to move us, if not in a way ſo violent and ecſtatic, yet not leſs powerful and more agreeable to our rational faculties. As perſons are differently affected when they ſpeak; ſo they naturally alter the tone of their voice. It riſes, ſinks, and has various inflections, according to the ſtate and diſpoſition of the mind. When the mind is calm and ſedate, the voice is moderate and even; when the former is dejected with ſorrow, the latter is languid; and when that is inflamed by paſſion, this is raiſed and elevated. It is the orator's buſineſs, therefore, to endeavour, that the tone of his voice appear natural and unaffected. For this end, he muſt ſuit it to the nature of the ſubject; but ſtill ſo as to be always decent. Some deliver a diſcourſe in a low drawling manner; others hurry on in ſo loud and boiſterous a tone, as if they imagined their hearers were deaf. But all the harmony of ſpeech lies in the proper temperament of the voice between theſe extremes. The principal properties of voice may be referred either to *quantity* or *quality*.

315. I. The QUANTITY of the voice conſiſts in its *highneſs* or *lowneſs*, *ſwiftneſs* or *ſlowneſs*, and the intermediate degrees between them.

316. i. Every perſon who ſpeaks in public, ſhould endeavour to fill the place where he ſpeaks. But ſtill he ought to be careful not to exceed the natural

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natural key of his voice. If he does it will neither be ſoft nor agreeable; but either harſh and rough, or too ſhrill and ſqueaking. Beſides, he will not be able to give every ſyllable its full and diſtinct ſound; which will render what he ſays obſcure.

317. ii. The like caution is to be uſed againſt the contrary extreme, that the voice be not dropped, and ſuffered to ſink *too low*. This will give the ſpeaker pain in raiſing it again to its proper pitch, and be no leſs offenſive to the hearers.

318. The medium between theſe two is a moderate and even voice. But this is not the ſame in all; that which is moderate in one would be high in other. Every perſon therefore muſt regulate it by the natural key of his own voice. A calm and ſedate voice is generally beſt; as a moderate ſound is moſt pleaſing to the ear, if it be clear and diſtinct. But this equality of the voice muſt alſo be accompanied with a variety, otherwiſe there can be no harmony. Nothing is leſs pleaſing than a diſcourſe pronounced throughout in one continued monotony. The gradations, whether higher or lower, ſhould be ſo gentle and regular as to preſerve a due proportion of the parts and harmony of the whole. An even voice is beſt fitted to keep the mind to cloſe attention. But the voice ought to agree with the ſtyle; and as the orator's province is not only to apply to the mind, but likewiſe to the paſſions; theſe require a great variety of the voice, high or low, vehement or languid, according to the nature of the paſſions he deſigns to affect.

319. iii. The next property is *ſwiftneſs*. That ſome expreſſions ought to be pronounced faſter than others, is manifeſt. Gay and ſprightly ideas ſhould not only be expreſſed louder but alſo faſter, than ſuch as are ſad and melancholy. And when we preſs an adverſary, the voice ſhould be briſk and quick. A precipitant and haſty pronunciation, however, is culpable, as well as ſpeaking *too ſlow*. This argues a heavineſs in the ſpeaker; and as he appears cool himſelf, he can never expect to warm his hearers.

320. To avoid both theſe extremes, the voice ought to be ſedate and diſtinct. To render it diſtinct, it is neceſſary, not only that each word and ſyllable ſhould have its juſt and full ſound, both as to time and accent; but likewiſe that every ſentence and clauſe ſhould be ſeparated by a proper pauſe and interval. This is eaſy to be done in reading, from the aſſiſtance of the points, (ſee PUNCTUATION); but it is no leſs to be attended to in ſpeaking. In proportion to the length and importance of the pauſes, the voice muſt be ſuſpended in different meaſures of time. But between ſentence and ſentence we reſpire, and begin anew. In long periods, the voice ſhould be favoured by beginning low and ſedately, that it may hold to the end without reſpiration; or if not, the breath ought to be recovered without ſinking the voice. For, if once the voice drop for want of breath before the period be finiſhed, not only the beauty but the ſenſe will be injured. Quintilian lays a great ſtreſs upon a due attention to theſe pauſes; and ſays, "Though it may appear not ſo conſiderable in itſelf, yet all the other virtues of a good pronunciation are deficient without it."

321. II. The chief QUALITIES of the voice are *ſtrength, clearneſs, fulneſs*, and *ſmoothneſs*. Though it is not in our power to give ourſelves what qualities of the voice we pleaſe, ſeveral defects of the voice may be helped by care and attention. Temperance is a great preſervative of the voice, and all exceſs is greatly prejudicial to it. The voice muſt ſuffer, if the organs of ſpeech have not their proper tone. For this purpoſe they muſt be kept in a due temperature; neither too moiſt nor too dry. All exceſſes affect the organs one or other of theſe ways.

322. i. A *ſtrong* voice is very ſerviceable to an orator, becauſe he is thereby capable to make himſelf heard. And if at any time he is forced to ſtrain it, he is in leſs danger of its failing him before he has finiſhed his diſcourſe. But he who has a weak voice ſhould be careful not to ſtrain it. He ought to begin low, and riſe gradually to ſuch a pitch as the key of his voice will eaſily carry him, without being obliged to ſink afterwards. Frequent inflections of the voice will be ſome aſſiſtance to him. But he ſhould take care to ſpeak deliberately, and eaſe his voice, by allowing due time for reſpiration at all the proper pauſes. It is an extreme much leſs inconvenient for ſuch a perſon to ſpeak too ſlow than too faſt. But this defect of a weak voice is ſometimes capable of being helped by proper methods; as is evident from the inſtance of Demoſthenes.

323. ii. A voice is ſaid to be *clear*, when the organs of ſpeech are ſuited to give every ſingle letter, and all the combinations of them in ſyllables and words, their proper and diſtinct ſound. Such a voice is very agreeable to the hearers; and no leſs ſo to the ſpeaker, as it ſaves him a great expence of ſpirits. For a moderate voice, if clear, will be as diſtinctly heard, as one much louder, if obſcure. This is a great advantage to the ſpeaker, becauſe he can better help his voice under command, and modulate it at pleaſure. An obſcure and confuſed voice is not always occaſioned by a deficiency in the organ; but is often the effect of a bad habit. Some, either from want of due care at firſt, or from inadvertency and negligence afterwards, run into a very irregular and confuſed manner of expreſſing their words; either by miſplacing the accent, confounding the ſound of the letters, or huddling the ſyllables one upon another, ſo as to render what they ſay often unintelligible. The moſt likely way to mend ſuch faults is to ſpeak deliberately.

324. iii. A *full* voice differs from a ſtrong or a loud voice. It fills the ear, but it is often not pleaſant. And therefore to render it ſo, it ſhould be frequently varied. Yet it ſeems better ſuited to the character of an orator, than a ſmall and ſhrill voice; becauſe it has ſomething in it more grave and manly. And thoſe, who have the misfortune of a very ſmall voice, ſhould be cautious of raiſing it to too high a pitch, eſpecially at once; becauſe the ſudden compreſſure of the organ is apt to occaſion a ſqueaking and diſagreeable ſound.

325. iv. A *ſoft* and *ſmooth* voice is the moſt muſical, eſpecially if it be flexible. Nothing is leſs harmonious than a voice that is harſh and rough. From theſe properties of the voice, we may conclude that to be the fitteſt for an orator which is moderate

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moderate, diſtinct, firm, clear, and ſmooth, and eaſily flexible to the ſeveral variations of ſound, which the various parts of the diſcourſe may require.

SECT. III. *Of* GESTURE.

326. By GESTURE is meant, a ſuitable conformity of the motions of the countenance and ſeveral parts of the body in ſpeaking to the ſubject-matter of the diſcourſe. The word is here uſed in a larger ſenſe than is done in common language. For we rarely uſe that word to denote the motions of the countenance, but as theſe make a conſiderable part of our preſent ſubject, they muſt here be comprehended under this term.

327. It is not agreed among the learned, whether voice or geſture has the greater influence upon us. But as the latter affects us by the eye as the former does by the ear, geſture ſeems to have this advantage, that it conveys the impreſſion more ſpeedily to the mind. Nor is its influence leſs upon our paſſions; nay, in ſome inſtances it appears to act more powerfully. A caſt of the eye ſhall expreſs deſire in as moving a manner as the ſofteſt language; and a different motion of it reſentment.

328. Nor is it in ſome reſpects leſs various and expreſſive than language. CICERO tells us, he often diverted himſelf by trying this with ROSCIUS the comedian; who could expreſs a ſentence as many ways by his geſtures, as he himſelf by words. And ſome dramas, called PANTOMIMES, are carried on wholly by mutes, who perform every part by geſtures only, in a way very intelligent, as well as entertaining to the ſpectators. Well therefore might Cicero call *action* (or geſture) *the language of the body*, ſince it is capable in ſo lively a manner to expreſs both our ideas and paſſions. But with reſpect to oratory, geſture may very properly be called the *ſecond part of pronunciation*; in which, as the voice ſhould be ſuited to the impreſſions it receives from the mind, ſo the ſeveral motions of the body ought to be accommodated to various tones and inflections of the voice. When the voice is even and moderate, little geſture is required; and nothing is more unnatural than violent motion, in diſcourſing upon ordinary and familiar ſubjects. The motions of the body ſhould riſe therefore, in proportion to the vehemence and energy of the expreſſion, as the natural and genuine effect of it.

329. It is hardly neceſſary to mention, that by the uniform practice of all nations, the moſt proper poſture for a public ſpeaker is to addreſs his audience ſtanding. But though ſtanding appears to be the moſt proper poſture, yet it is very unbecoming for the body to be entirely without motion. It ſhould not long continue in the ſame poſition, but be conſtantly changing, though the motion be very moderate. There ought to be no appearance of ſtiffneſs, but a certain eaſe and pliableneſs, ſuiting every expreſſion; by which means, when a greater degree of motion is neceſſary, it will appear leſs ſudden and vehement; for as the raiſing, ſinking, and various inflections of the voice muſt be gradual, ſo likewiſe ſhould the motions of the body. It is only on ſome particular occaſions that an haſty impetuoſity is proper in either caſe.

330. As to the ſeveral parts of the body, the head is the moſt conſiderable. To lift it up too high has the air of arrogance; to ſtretch it out too far, or throw it back, looks clowniſh; to hang it downwards on the breaſt, ſhows an unmanly baſhfulneſs; and to ſuffer it to lean on either ſhoulder argues indolence. Wherefore, in calm and ſedate diſcourſe, it ought to keep its natural ſtate, an upright poſture. However, it ſhould not be long without motion, but gently turn, ſometimes on one ſide, and ſometimes on the other, as occaſion requires, that the voice may be heard by all who are preſent. It ſhould always accompany the other actions of the body, and turn on the ſame ſide with them; except when averſion to any thing is expreſſed, which is done by ſtretching out the right hand, and turning the head to the left.

331. But it is the countenance that chiefly repreſents both the paſſions and the diſpoſition of the mind. By this we ſupplicate, threaten, ſooth, invite, forbid, conſent, or refuſe, without ſpeaking. But the ſeveral parts of the face bear their part, and contribute to the proper and decent motion of the whole. In a calm and ſedate diſcourſe, all the features retain their natural appearance. In ſorrow, the forehead and eyebrows lour, and the cheeks hang down. But, in joy and cheerfulneſs, the forehead and eyebrows are expanded, the cheeks contracted, and the corners of the mouth drawn upwards. Anger and reſentment contract the forehead, draw the brows together, and thruſt out the lips; and terror elevates both the brows and forehead. See LE BRUN's deſcription of the effects of the paſſions on the features, under DRAWING, *Sect.* XI.

332. But as the EYES are the moſt active and ſignificant, Cicero adviſes, that the greateſt care ſhould be taken in their management. We readily gueſs at a perſon's intention, by his eyes. And any ſudden change or emotion of the mind is preſently followed by an alteration in the look. In ſpeaking therefore upon pleaſant and delightful ſubjects, the eyes are briſk and cheerful; as, on the contrary, they ſink and are languid in delivering any thing melancholy and ſorrowful. A gentle and moderate motion of the eyes is in an orator moſt ſuitable, always directed to ſome of the audience, and gradually turning from ſide to ſide with an air of reſpect and modeſty, and looking them decently in the face, as in common diſcourſe: Such a behaviour will of courſe draw attention. But as all the paſſions are in the moſt lively manner expreſſed in the eyes, their motions ought to vary according to the different nature of thoſe paſſions they are ſuited both to diſcover in the ſpeaker, and convey to his hearers; ſince, as the quickeſt acceſs to the mind is by the ſight, a proper well-timed look will ſooner effect this than can be done by words.

333. As to the other parts of the body, the ſhoulders ought not to be elevated; as it contracts the neck, and hinders the proper motion of the head. Nor, on the other hand, ſhould they be drawn down and depreſſed, as this occaſions a ſtiffneſs both on the neck and the whole body.

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Their natural poſture therefore is moſt eaſy and graceful.

334. A continued motion of the arms any way, is to be avoided. Their action ſhould generally be very moderate, and follow that of the hands unleſs in very pathetic expreſſions, where it may be proper to give them a more lively ſpring.

335. The hands need never be idle. Quintilian ſeems to think them as neceſſary and powerful in action, as Cicero does the eyes. "The hands (ſays he), without which all geſture is lame and weak, have a greater variety of motions than can well be expreſſed; for they are almoſt equal to our words. In ſhort he ſtyles them "the *common language* of all mankind." Now, all bodily motion is either upward or downward, to the right or left, forward or backward, or elſe circular. The hands are employed by the orator in all theſe, except the laſt. And as they ought to correſpond with our expreſſions, ſo they ought to begin and end with them. In admiration, and addreſſes to heaven, they muſt be elevated, but never raiſed above the eyes; and in ſpeaking of things below us, they are directed downwards. Side motion ſhould generally begin from the left, and terminate gently on the right. In demonſtrating, addreſſing, and on ſeveral other occaſions they are moved forward; and in threatening ſometimes thrown back. But when the orator ſpeaks of himſelf, his right hand ſhould be gently laid on his breaſt. When no other motion is neceſſary, the hands ſhould be kept about as high as the breaſt, ſo as to make near a right angle with the arm. This is not only graceful, but likewiſe the moſt eaſy poſture, and gives the leaſt ſtrain to the muſcles. They ſhould never be ſuffered to hang down, nor to loll upon the cuſhion or bar. The left hand ſhould never move alone, but accommodate itſelf to the motions of the right. In motions to the left ſide, the right hand ſhould not be carried beyond the left ſhoulder. In promiſes and expreſſions of compliment, the motions of the hands ſhould be gentle and ſlow; but in exhortations and applauſe more ſwift. The hands ſhould generally be open; but in expreſſions of compunction and anger they may be cloſed. All finical and trifling actions of the fingers ought to be avoided; nor ſhould they be ſtretched out and expanded in a ſtiff and rigid poſture, but kept eaſy and pliable.

336. Neither the breaſt nor the belly ſhould be thruſt out, as it looks ill; and hinders the free motion of the trunk; which ought not to be kept too ſtiff and upright, but eaſy and flexible, always ſuiting itſelf to the motions of the head and hands. The feet ſhould continue ſteady, and not give the body a wavering and giddy motion by frequently ſhifting; though ſome perſons fall into that habit without moving their feet.

337. The geſtures hitherto treated of are ſuch as naturally accompany our expreſſions. Thoſe above mentioned, if duly attended to, will be found ſufficient to anſwer all the purpoſes of our modern pronunciation. The ancients, indeed, uſed ſeveral more vehement actions and geſtures than we are accuſtomed to. PHILIP, the Roman orator, was wont to tell his friends, "he was never fit to talk, till he had *warmed* his arm." He doubtleſs, therefore, uſed a more violent motion with his arms and hands than is common with us. And Cicero calls the arm projected *the orator's weapon*. Indeed, to extend or brandiſh the arm, carries in it an air of command and authority, which was not unbecoming the character of Philip, who was a perſon of the higheſt rank and quality.

338. To ſpeak low at firſt has the appearance of modeſty, and is beſt for the voice; which, by riſing gradually, will with more eaſe be carried to any pitch that may be afterwards neceſſary, without ſtraining it. However, ſome variation of the voice is always proper to give it harmony. Sometimes it is not improper for an orator to ſet out with a conſiderable degree of warmth, expreſſed by ſuch an elevation of the voice and geſtures of the body as are ſuited to repreſent the emotions of his mind. But this is not ordinarily the caſe. We have ſome inſtances of this in Cicero; as in his oration for Roſcius Amerinus, where the heinouſneſs of the charge could not but excite his indignation againſt the accuſers. And in that againſt Piſo, and the two firſt againſt Catiline, which begin in the ſame manner, from the reſentment he had conceived againſt their perſons and conduct.

339. In the *narration* the voice ought to be raiſed to a higher pitch. Facts ſhould be ſtated diſtinctly and accurately, with a proper emphaſis laid upon the principal circumſtances. The *propoſition* ſhould be delivered with a clear and audible voice, and its diviſions diſtinctly marked.

340. The *confirmation* admits of a great variety, both of voice and geſture; and the reaſoning ought to be accompanied with ſuitable actions. In *confutation*, the arguments of the oppoſite party ſhould be ſtated plainly and diſtinctly, unleſs they appear unworthy of a ſerious anſwer; in which caſe they may be anſwered with humour, or expoſed with ridicule. TUBERO having made it part of his charge againſt Ligarius, that he was in Africa during the civil war between Cæſar and Pompey, CICERO, in his reply, ſaid, "Cæſar, my kinſman, Tubero has laid before you a *new crime*, and till this day unheard of, that Q. Ligarius was in Africa!"

341. In the concluſion, both the voice and geſture ſhould be briſk and ſprightly, which may ſeem to ariſe from a ſenſe of the ſpeaker's opinion of the goodneſs of his cauſe, and that he has offered nothing but what is agreeable to reaſon and truth; as likewiſe from his aſſurance that the audience agree with him in the ſame ſentiments. In every undertaking that requires care and thought, perſons are apt at firſt to be ſedate and moderate, but when it is drawing to an end, and is near finiſhed, it is very natural to appear more gay. If an enumeration of the principal arguments of the diſcourſe be convenient, as it ſometimes is, where they are pretty numerous, or the diſcourſe is long, they ought to be expreſſed in the moſt clear and forcible manner. And if there be an addreſs to the paſſions, both the voice and geſture muſt be ſuited to the nature of them.

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342. Thus we have laid before our readers, a brief but comprehenfive view of the principles, rules, chief requifites, and practice of oratory. But after all, it is impoffible to gain a juft and decent pronunciation of voice and geflure merely from rules, without practice and an imitation of the beft examples. It may alfo be faid of an *Orator* as of a *Poet*, "*nafcitur non fit.*" But the ftudent of this fcience fhould conlider his own genius. We feldom find that any actor can excel in all characters, but if he performs one well he is deficient in another; and therefore they commonly confine themfelves to fuch as beft fuit them. The cafe is the fame with an orator, who fhould keep within thofe bounds which nature has prefcribed. Every one fhould endeavour to know his own powers, and act accordingly: though, in moft cafes, nature may be much affifted and improved by art. See Profeffor Ward's *Syftem of Oratory*.

ORA

(1.) ORATORY, among the Romanifts, a clofet or like apartment near a bed-chamber, furnifhed with an altar, crucifix, &c. for private devotions.

(2.) Oratory, Congregation of the. See Congregation, § 3; and Neri, N° 2.

* ORATOUR. *n. f.* [*orateur*, Fr. *orator*, Lat.] 1. A public fpeaker; a man of eloquence.—

Poor queen and fon! your labour is but loft;
For Warwick is a fubtle *orator*. *Shak.*
Of old fome *orator* renown'd,
In Athens or free Rome, where eloquence
Flourifh'd, fince mute! to fome great cauſe addreſs'd,
Stood in himſelf collected. *Milton.*

—It would be altogether vain and improper, in matters belonging to an *orator*, to pretend to ſtrict demonſtration. *Wilkins.*—The conſtant deſign of both theſe *orators*, in all their ſpeeches, was to drive ſome one particular point. *Swift.*—I have liſtened to an *orator* of this ſpecies, without being able to underſtand one ſingle ſentence. *Swift.*—

Both *orators* ſo much renown'd,
In their own depths of eloquence were drown'd.
Dryden.

2. A petitioner. This ſenſe is uſed in addreſſes to chancery.

ORAWITZA, a river of Hungary, which runs into the Waag, nine miles north of Arva.

ORAYOI, a town of New Mexico, 150 miles SW. of Santa Fe.

* (1.) ORB. *n. f.* [*orbe*, Fr. *orbis*, Lat.] 1. Sphere; orbicular body.—A mighty collection of water incloſed in the bowels of the earth conſtitutes an huge *orb* in the interior or central parts; upon the ſurface of which *orb* of water the terreſtrial ſtrata are expanded. *Woodward.* 2. Circular body.—

The Trojan chief, who, held at bay from far,
On his Vulcanian *orb* ſuſtain'd the war. *Dryd.*

3. Mundane ſphere; celeſtial body; light of heaven.—

In the floor of heav'n
There's not the ſmalleſt *orb* which thou behold'ſt,
But in his motion like an angel ſings. *Shak.*

4. Wheel; any rolling body.—

The *orbs*
Of his fierce chariot roll'd. *Milton.*

5. Circle; line drawn round.—A ſubject's motion is in a larger *orb*. 6. Circle deſcribed by any of the mundane ſpheres.—Aſtronomers, to ſolve the phenomena, framed to their conceit eccentrics and epicycles, and a wonderful engine of *orbs*, though no ſuch things were. *Bacon.*—

With ſmiling aſpect you ſerenely move,
In your fifth *orb*, and rule the realm of love.
Dryden.

7. Period; revolution of time.—

When fatal courſe
Had circled his full *orb*. *Milton.*

8. Sphere of action.—

Will you again unknit
The churliſh knot of all abhorred war,
And move in that obedient *orb* again? *Shak.*

9. It is applied by *Milton* to the eye, as being luminous and ſpherical.—

A drop ſerene hath quench'd their *orbs*.
Milton.

(2.) Orb, in aſtronomy, (§ 1, *def.* 1.), a hollow globe.

(3.) Orb, in tactics (§ 1, *def.* 2.), is the diſpoſing of a number of ſoldiers in a circular form of defence. The orb has been thought of conſequence enough to employ the attention of the famous marſhal de Puyſegur in his art of war, who prefers this poſition to throw a body of infantry in an open country to reſiſt cavalry, or even a ſuperior force of infantry; becauſe it is regular and equally ſtrong, and gives an enemy no reaſon to expect better ſucceſs by attacking one place than another. Cæſar drew his whole army in this form when he fought againſt Labienus. The whole army of the Gauls were formed into an orb, under the command of Sabinus and Cotta, when fighting againſt the Romans. This orb was generally formed ſix deep.

(4.) Orb, in geography, a river of France, which riſes in the department of Allier, eight miles NW. of Lodeve, and falls into the Mediterranean eight miles below Beziers.

ORBAIS, a town of France, in the department of Aiſne, 7½ miles S. of Dormans, and 13 SE. of Chateau Thierry.

ORBAISSAN, or ORBASSAN, a town of France, in the department of the Po, and late Piedmonteſe, 6 miles SW. of Turin.

* ORBATION. *n. f.* [*orbatus*, Lat.] Privation of parents or children.

(1.) ORBE, a town of Germany, in the circle of the Lower Rhine, and late electorate of Mentz, famed for its ſalt works; 26 miles E. of Franckfort.

(2.) Orbe,

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(2.) ORBE, a river of Switzerland which rises in Mount Jura, passes Bienne and the lake of Neuchatel, and runs into the Aar, 3 miles W. of Beuren in Berne. It has several cataracts, and a bridge of one arch at ORBE.

(3.) ORBE, a town of Switzerland, in Berne, on the above river, in a very romantic situation. It has an Infirmary for patients who have distorted limbs. It is 5 miles SW. of Yverdun, 13 N. of Lausanne, 24 SW. of Friburg, and 40 of Bern. Lon. 6. 43. E. Lat. 46. 49. N.

ORBEC, a town of France, in the dep. of Calvados, 10 miles SE. of Lisieux, and 30 ESE. of Caen.

* ORBED. *adj.* [from *orb.*] 1. Round; circular: orbicular—

All those sayings will I overswear,
And all those swearings keep as true in soul,
As doth that *orbed* continent the fire,
That severs day from night. *Shak.*

2. Formed into a circle.—

Truth and justice then,
Will down return to men,
Orb'd in a rainbow. *Milton.*

3. Rounded.

The wheels were *orb'd* with gold. *Addison.*

ORBEGA, a river of Spain, which runs into the Duero, near Zamora.

ORBEIN-MOR-ASSYNT, a high mountain of Scotland, in Sutherlandshire, in the parish of Assynt.

* ORBICULAR. *adj.* [*orbiculaire*, French; *orbiculatus*, Latin.] 1. Spherical.—

Parted by th' empyreal bounds,
His quadrature from thy *orbicular* world,
Milton.

2. Circular; approaching to circularity.—Whereas before it was of an *orbicular* make, they now look as if they were pressed. *Guardian.*—By a circle I understand not here a perfect geometrical circle, but an *orbicular* figure, whose length is equal to its breadth. *Newton.*

* ORBICULARLY. *adv.* [from *orbicular.*] Spherically; circularly.

* ORBICULARNESS. *n. s.* [from *orbicular.*] The state of being orbicular.

* ORBICULATED. *adj.* [*orbiculatus*, Latin.] Moulded into an orb.

ORBIEU, a river of France, which rises in the dep. of the Eastern Pyrennees, and runs into the Aude, 5 miles NW. of Narbonne.

ORBILIUS PUPILLUS, a grammarian of Beneventum, who was the first instructor of the Poet Horace. He died in his 100th year.

ORBION, a lake of the French republic, in the island and department of Corsica, on the E. coast, 27 miles SE. of Corte.

(1.) * ORBIT. *n. s.* [*orbite*, Fr. *orbita*, Latin.] 1. The line described by the revolution of a planet—

Suppose more suns in proper orbits roll'd,
Dissolv'd the snows. *Blackmore.*

—Suppose the earth placed nearer to the sun, and revolve for instance in the *orbit* of Mercury; there the whole ocean would even boil with extremity of heat. 2. Small orb. Not proper.—

Attend, and you discern it in the fair.
Conduct a finger, or reclaim a hair;
Or roll the lucid *orbit* of an eye;
Or in full joy elaborate a sigh. *Young.*

(2.) ORBIT, in astronomy, is the path of a planet or comet, or the curve that it describes in its revolution round its central body; thus, the earth's orbit is the curve which it describes in its annual course round the sun, and usually called the ECLIPTIC. See ASTRONOMY, *Index.*

ORBITANIUM, an ancient town of the Samnites. *Liv.* xxiv. c. 20.

ORBITELLO, a strong town of Etruria, in the Siennese, but belonging to Naples, according to the Rev. C. Cruttwell. It has several forts, and a good harbour, near the mouth of of the Albegna; 58 miles S. by W. of Sienna, and 85 S. of Florence, or 78, as Mr Cruttwell has it. Lon. 11. 10. E. Lat. 42. 28. N.

* ORBITY. *n. s.* [*orbus*, Latin.] Loss, or want of parents or children. *Bacon.*

ORBRE, a river of France, which rises in the mountains of the Cevennes, waters Beziers, and falls into the Gulf of Lyons, 5 miles below Lyons.

(1.) * ORBY. *adj.* [from *orb.*] Resembling an orb. Not used.—

It smote Atrides *orby* targe. *Chapman.*
The world was with the spring; and *orby* houres
Had gone the round againe. *Chapman.*

(2.) ORBY, a town of Sweden, in W. Gothland.

* ORC. *n. s.* [*orca*, Lat. ὄργυα.] A sort of sea-fish. *Ainsworth.*

An island salt and bare,
The haunt of seals and *orcs*. *Milton.*

ORCADES, the *Orkney Islands*. See ORKNEY.

* ORCHAL. *n. s.* A stone from which a blue colour is made. *Ainsworth.*

(1.) ORCHAMPS, a town of France, in the dep. of Jura; 7½ miles NE. of Dole, and 9 W. of Quingey.

(2.) ORCHAMPS EN VENNES, a town of France, in the dep. of Doubs, 15 miles E. of Ornans, and 14 NNE. of Pontarlier.

* ORCHANET. *n. s.* An herb. *Ainsworth.*

(1.) * ORCHARD. *n. s.* [either *hortyard* or *wortyard*, says *Skinner*; *ortgeard*, Saxon. *Junius.*] A garden of fruit-trees.—Planting of *orchards* is very profitable, as well as pleasurable. *Bacon.*—

They overcome their riches not by making
Baths, *orchards*, fish pools. *Ben Jonson.*

—A fair and pleasant dwelling, with the conveniences of gardens and *orchards*. *Fell.*—

Her private *orchards*, wall'd on ev'ry side,
To lawless sylvans all access deny'd. *Pope.*

(2.) *An* ORCHARD, is a garden department, configned entirely to the growth of standard fruit-trees, for furnishing a large supply of the most useful kinds of fruit. In the orchard may be planted as standards, all sorts of apple trees, most sorts of pears and plumbs, and all sorts of cherries: which four species are the capital orchard fruits; each comprising numerous valuable varieties. But a complete orchard should also have quinces, medlars, mulberries, service-trees, filberts, Spanish nuts, barberries, walnuts, and chesnuts; which two last are particularly applicable for the boundaries of orchards, to screen the other trees from impetuous winds and cold blasts. Sometimes

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orchards conſiſt entirely of apple trees, particularly in the cyder counties, where they are cultivated in very great quantities in large fields, and hedge-rows, for the fruit to make cyder. And ſometimes whole orchards of conſiderable extent are entirely of cherry-trees, when the fruit is deſigned for ſale in ſome great city. There are great numbers of large cherry orchards in Kent, which is famous for that ſort called *Kentiſh cherry*, as being generally a great bearer. Others are ſtored with all the principal ſorts of cultivated cherries, from the earlieſt to the lateſt kinds. See PRUNUS, N° 4. CERASUS. A general orchard, however, compoſed of all the above mentioned fruit-trees, ſhould conſiſt of a double portion of apple-trees or more, becauſe they are conſiderably the moſt uſeful fruit, and may be continued for uſe the year round. The utility of a general orchard, both for private uſe and profit, ſtored with the various ſorts of fruit-trees, muſt be very great, as well as afford pleaſure from the delightful appearance it makes from early ſpring till late in autumn: In ſpring the various trees in bloſſom are highly ornamental; in ſummer, the pleaſure is heightened by obſerving the various fruits advancing to perfection; and as the ſeaſon advances, the mature growth of the different ſpecies arriving to perfection, in regular ſucceſſion, from May or June, until the end of October affords delight, as well as great profit.

(3.) ORCHARD, EXTENT, SITUATION, AND SOIL PROPER FOR AN. The proper extent of ground for an orchard muſt be proportioned, in ſome meaſure, to the extent of land, and the quantity of fruit required either for private uſe or for public ſupply; ſo that an orchard may be from half an acre to 20 or more in extent. With reſpect to the ſituation of an orchard, we may obſerve very thriving orchards both in low and high ſituations, on declivities and plains, in various aſpects or expoſures, provided the ſoil is good: but very low damp ſituations ſhould be avoided as much as the nature of the place will admit; for in very wet ſoils no fruit trees will proſper; but a moderately low ſituation, free from copious wet, may be more eligible than an elevated ground, as being leſs expoſed to tempeſtuous winds. Yet a ſituation having a ſmall declivity is very deſirable, eſpecially if its aſpect incline towards the E. SE. or S. which are more eligible than a W. aſpect; but a N. aſpect is the worſt of all, unleſs compenſated by the peculiar good quality of the ſoil. And as for ſoil, any common field or paſture, that produces good crops of corn, graſs, or kitchen vegetables, is ſuitable for an orchard; if it be of a loamy nature, it will be a particular advantage: any ſoil, however, of a good quality, not too light and dry, or too heavy, ſtubborn, or wet, but of a medium nature, of a ſoft pliant temperature, not leſs than one ſpade deep of good ſtaple, will be proper for this purpoſe.

(4.) ORCHARDS, PREPARATION OF THE GROUND FOR. The preparation of the ground for the reception of trees, is by trenching; or, if for very conſiderable orchards, by deep ploughing; but trench-digging, one or two ſpades, as the ſoil will admit, is the moſt eligible, either wholly or partially, in the places where the lines of trees are to ſtand, a ſpace of ſix or eight feet wide, all the way in each row, eſpecially if it be graſs ground, and intended to be kept in the ſward; or if any of the under-crops are deſigned to be raiſed, the ground may be wholly trenched at firſt: in either caſe trench the ground in the uſual way to the depth of the natural ſoil; and if in graſs, turn the ſward clean to the bottom of each trench, which, when rotted, will prove an excellent manure. In planting orchards, however, on graſs grounds, ſome only dig pits for each tree, capacious enough for the reception of the roots, looſening the bottom well, without the labour of digging any other part of the ground. The ground muſt be fenced ſecurely againſt cattle, &c. either with a good ditch and hedge, or with a paling fence, as may be moſt convenient. See FENCE, § 2—67. and HEDGE, § 1—12.

(5.) ORCHARDS, SEASON, AND METHOD OF PLANTING THE TREES IN. The beſt ſeaſon for planting all the ſorts of fruit trees is autumn, ſoon after the fall of the leaf, from about the end of October until December; or in open weather from October until March. Chooſe principally full ſtandards, with ſtraight clean ſtems, ſix feet high; each with a branchy well-formed head, or from 2 or 3, to 4 years growth; and let ſeveral varieties of each ſpecies be choſen, that ripen their fruit at different times, from the earlieſt to the lateſt, that there may be a proper ſupply of every ſort regularly during the different ſeaſons. Of apples and pears in particular, chooſe a much greater quantity of the autumnal and late kinds than of the early ſorts; but moſt of all of apples; for the ſummer fruit is but of ſhort duration, only proper for temporary ſervice; but the later ripening kinds keep ſound ſome conſiderable time for autumnal uſe: and the lateſt ſorts that ripen in October, continue in perfection for various uſes all winter, and ſeveral ſorts until the ſeaſon of apples return. Having made choice of the proper ſorts, and marked them, let them be taken up with the utmoſt care, ſo as to preſerve all their roots as entire as poſſible; and when taken up, prune off any broken or bruiſed parts of the roots, and juſt tip the ends of the principal roots, in general, with the knife on the under ſide, with a kind of ſlope outward. If the trees have been already headed, or ſo trained as to have branched out into regular ſhoots to form each a proper head, they muſt be planted with the heads entire, only retrenching or ſhortening any irregular or ill-placed ſhoot that takes an aukward direction, or grows acroſs its neighbours, or ſuch as may run conſiderably longer than the reſt, &c. The arrangement of the trees muſt be in rows, each kind ſeparate, at diſtances according to the growth of the different ſorts; but for the larger growing kinds, ſuch as apples, pears, plums, cherries, &c. they ſhould ſtand from 25 to 30 feet every way aſunder, or 40 feet at moſt. Each ſpecies and its varieties ſhould generally be in rows by themſelves, the better to ſuit their reſpective modes of growth: though for variety there may be ſome rows of apples and pears arranged alternately, as alſo of plums and cherries; and towards the boundaries there may be ranges of leſſer growth, as quinces, medlars, filberts, &c. and the outer row of all may be walnut-trees, and ſome cheſnuts, ſet pret-

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ty circle to defend the other trees from violent winds. According to the above diſtances, proceed to ſtake out the ground for making the holes for the reception of the trees; which if made to range every way, will have a very agreeable effect, and admit the currency of air, and the ſun's influence more effectually. In planting very extenſive orchards, ſome divide the ground into large ſquares of different dimenſions, with intervals of 50 feet between; ſerving both as walks, and for admitting a greater currency of air; in different quarters planting different ſorts of fruit, as apples in one, pears in another, and plumbs and cherries in others, &c. and thus it may be repeated to as many quarters for each ſpecies and its varieties as may be convenient. As to the mode of planting the trees; a wide hole muſt be dug for each, capacious enough to receive all the roots freely every way without touching the ſides. When the holes are all ready, proceed to planting, one tree in each hole, a perſon holding the ſtem erect, whilſt another trims in the earth, previouſly breaking it ſmall, and caſting it in equally all about the roots, frequently ſhaking the tree to cauſe the mould to ſettle in cloſe about all the ſmaller roots and fibres, and ſo as to raiſe the tree gradually up, that the crown of the roots may be but two or three inches below the general ſurface; and when the hole is filled up, tread it gently, firſt round the outſide, then near the ſtem of the tree, forming the ſurface a little hollow; and then if on the top of all is laid ſome inverted turf to the width of the holes, forming it with a ſort of circular bank, 3 or 4 inches high, it will ſupport the tree, and guard the roots from drying winds and ſummer's drought: obſerving that each tree ſtand perfectly upright, and that they range exactly in their proper rows.

ORCHESTICE, in antiquity, a claſs of GYMNASTIC exerciſes; comprehending, 1. DANCING: 2. *Cubiſtice*, or the art of *Tumbling*: and 3. SPHÆRISTICE, or TENNIS, including all the exerciſes with *Pilæ* or balls.

ORCHESTON St MARY's, a town of Wilts, on Saliſbury plain, about 9 miles from Saliſbury. There is a curious ſpecies of graſs found at this place in a meadow belonging to Lord Rivers, at preſent in the poſſeſſion of a farmer. The meadow is ſituated on a ſmall brook, is frequently overflowed, and ſometimes continues ſo a great part of the winter. It bears the greateſt burden in a wet ſeaſon. (See TRITICUM, N° 9.)

ORCHESTRA, in the Grecian theatres, was that part of the *proſcenium* or ſtage where the chorus uſed to dance. In the middle of it was placed the θυμέλη or *pulpit*. The orcheſtra was ſemicircular, and ſurrounded with ſeats. In the Roman theatres it made no part of the *ſcena*, but anſwered pretty nearly to the pit in our playhouſes, being taken up with ſeats for ſenators, magiſtrates, veſtals, and other perſons of diſtinction. The actors never went down into it. See THEATRE.

* ORCHESTRE. *n. ſ.* [French; ὀρχήστρα.] The place where the muſicians are ſet at a publick ſhow.

ORCHIA LEX, inſtituted by Orchius the tribune of Rome, A. U. C. 566. Its intention was to limit the number of gueſts that were to be admitted at an entertainment; and it alſo enforced, that, during ſupper, which was the chief meal among the Romans, the doors of every houſe ſhould be left open.

ORCHIES, a town of France, in the dep. of the N. and late prov. of French Flanders; 9 miles SW. of Tournay, and 14 SSE. of Lille. Lon. 3. 35. E. Lat. 50. 28. N.

ORCHILLA, or HORCHILLA, an iſland, or rather a cluſter of iſlands, in the Caribbean Sea, of a ſemi-lunar form, ſeparated from each other by very ſhallow inlets. On the E. and W. capes are ſome hills, which abound with goats. The N. and E. coaſts abound with trees and paſture. The reſt is barren. The SW. coaſt is perpendicular like a wall. Theſe iſlands lie 80 miles N. of Terra Firma, and 160 E. by S. of Curaçoa. Lon. 65. 20. W. Lat. 12. 0. N.

ORCHIMONT, a town of France, in the department of the Foreſts, and ci-devant duchy of Luxemburg, on the Semoy; 10 miles N. of Sedan.

ORCHIS, FOOL-STONES, or GOAT-STONES, a genus of the diandria order, belonging to the gynandria claſs of plants; and in the natural method giving name to the ſeventh order, *Orchidæ*. Its characters are theſe: It has a ſingle ſtalk, with a vague ſheath, and no empalement; the flower hath five petals, three without and two within; the nectarium is of one leaf, fixed to the ſide of the receptacle, between the diviſion of the petals; the upper lip is ſhort and erect, the under large, broad, and ſpreading; the tube is pendulous, corniform, or like a horn, and prominent behind; it hath two ſhort ſlender ſtamina, ſitting upon the pointal, with oval erect ſummits, fixed to the upper lip of the nectarium; it hath an oblong contorted germen, under the flower, with a ſhort ſtyle, faſtened to the upper lip of the nectarium; the germen afterwards turns to an oblong capſule, with one cell, having three keel-ſhaped valves, opening on the three ſides, but jointed at top and bottom, filled with ſmall ſeeds like duſt. Miller enumerates 10, and Linnæus 33 ſpecies. All theſe ſorts of orchis deſcribed by Miller grow wild in ſeveral parts of England, but on account of the extreme oddneſs and beauty of their flowers, deſerve a place in every good garden; and the reaſon of their not being cultivated in gardens, proceeds from the difficulty of tranſplanting them: though this may be eaſily overcome, where a perſon has an opportunity of marking their roots, in their time of flowering, and letting them remain until their leaves are decayed, when they may be tranſplanted with ſafety; for it is the ſame with moſt ſorts of bulbous or fleſhy-rooted plants, which, if tranſplanted before the leaves decay, ſeldom live, notwithſtanding you preſerve a large ball of earth about them; for the extreme parts of their fibres extend to a great depth in the ground, from whence they receive their nouriſhment, which, if broken or damaged by taking up their roots, ſeldom thrive after; for though they may ſometimes remain alive a year or two, yet they grow weaker until they quite decay; which is alſo the caſe with tulips, fritillarias, and other bulbous roots. But

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if their ſoil and ſituation be adapted to their various ſorts, they will thrive and continue ſeveral years, and during their ſeaſon of flowering will afford as great varieties as any flowers which are at preſent cultivated. The moſt remarkable ſpecies are the following:

1. ORCHIS LATIFOLIA. See N° 2.

2. ORCHIS MASCULA, *male fool-ſtones*, hath a root compoſed of two bulbs, crowned with oblong, broad, ſpotted leaves; upright-ſtalks, a foot high; garniſhed with one or two narrow amplexicaule leaves; and terminated by a long ſpike of reddiſh purple flowers, having the petals reflexed backward; a quadrilobed crenated lip to the nectarium, and an obtuſe horn. The flowers of this ſpecies poſſeſs a very agreeable odour. This ſpecies is the moſt valuable; although the roots of ſome of the palmated ſorts, particularly of the ORCHIS LATIFOLIA, anſwer almoſt equally well. See *Plate* CCXLVII. and CCXLVIII.

3. ORCHIS MILITARIS, or *man orchis*, hath a double bulbous root, crowned with oblong amplexicaule leaves; erect flower-ſtalks, eight or ten inches high; terminated by a looſe ſpike of aſh-coloured and reddiſh flowers, having confluent petals; a quinquefid, rough ſpotted lip to the nectarium, and an obtuſe horn. The ſtructure of the flowers exhibit the figure of a naked man; and are often of different colours in the ſame flower, as aſh-colour, red, brown, and dark-ſtriped.

4. ORCHIS MORIO, or *female orchis*, hath a double bulbous root, crowned with oblong, ribbed, ſpreading leaves; erect flower-ſtalks, eight or ten inches high; garniſhed with a few amplexicaule leaves; and terminated by a ſhort looſe ſpike of flowers, having connivent petals, a quadrifid crenated lip to the nectarium, and an obtuſe horn. All the ſpecies are very hardy perennials, with bulbous fleſhy roots. The flowers appear in May, June, and July, but principally in June: their mode of flowering is univerſally in ſpikes, many flowers in each ſpike; and each flower is compoſed of 5 petals in 2 ſeries, and a nectarium. The ſeaſon for removing them is in the ſummer, after they have done flowering, when their leaves and ſtalks decay: plant them 3 inches deep, and let them remain undiſturbed ſeveral years; for the leſs they are removed, the ſtronger they will flower. The roots of all the ſpecies have a remarkable reſemblance to the ſcrotum of animals, whence the name. This plant flouriſhes in various parts of Europe and Aſia, and grows in our country ſpontaneouſly, in great abundance. It is aſſiduouſly cultivated in the E.; and the root of it forms a conſiderable part of the diet of the inhabitants of Turkey, Perſia, and Syria. From it is made the alimentary powder called SALEP; which, prepared from foreign roots, is ſold at 5*s* or 6*s*. per lb. though it might be furniſhed by ourſelves at the 6th part of that price, if we would cultivate this plant. The orchis maſcula is the moſt valued for this purpoſe. A dry and not very fertile ſoil is beſt adapted to its growth. The propereſt time for gathering the roots, is when the ſeed is formed, and the ſtalk is ready to fall; becauſe the new bulb, of which the ſalep is made, is then arrived at its full maturity, and may be diſtinguiſhed from the old one, by a white bud riſing from the top of it, which is the germ of the orchis of the ſucceeding year. The culture of the orchis is an object highly deſerving of encouragement. And as the root, if introduced into common uſe, would furniſh a cheap, wholeſome, and moſt nutritious article of diet, it would be ſufficiently profitable to the farmer. See SALEP.

ORCHOMENIANS, the inhabitants of Orchomenos. See MINYÆ.

ORCHOMENOS, or ORCHOMENUS, } 3 ancient cities: 1. in Arcadia, ſo named from a ſon of Lycaon: (*Pauſ.* ix. 37.) 2. in Bœotia, W. of Lake Copais, called alſo *Minyeia*. 3. and 4. a town and river of Theſſaly. *Strabo*. 5, 6. It was alſo a name of two princes. See MINYÆ and MINYAS.

ORCI. See ORZI, N° 1. and 2.

ORCIER, a town of France, in the department of the Upper Alps; 9 m. NW. of Embrun.

ORCINOVI, or ORCI NUOVO. See ORZI.

ORCO, a river of France, in the late Piedmonteſe, which runs into the Po, near Chivazzo.

(1.) ORCUS, or PLUTO, god of the infernal regions, ſo called from ὅρκος, a *tomb* or *ſepulchre*, or from ὅρκος *an oath* by the river Styx. The ancients gave this name alſo to all the divinities of the infernal regions, even to Cerberus. This deity has alſo been confounded with Charon: he had a temple at Rome.

(2.) ORCUS, a river of Theſſaly, which took its riſe from the marſhes of the Styx, and the waters of which were ſo thick that they floated like oil upon the ſurface of the river Peneus, into which they diſcharged themſelves. This river probably ſuggeſted to the poets the idea of the infernal abodes, which they denominated *Orcus*.

ORCYNIA, an ancient town of Cappadocia; near which Eumenes was defeated by Antigonus.

(1.) * ORD. *n. ſ.* An edge or ſharpneſs; as an *ordhelm*, *ordbright*, &c. and in the Iſlandiſh tongue, *ord* ſignifies a ſpear or dart. *Gib.*—*Ord*, in old Engliſh, ſignified *beginning*; whence probably the proverbial phraſe *odds* [*ords*] and *ends*, for ſcraps or remnants, and perhaps *orts* for waſte proviſion.

(2.) ORD, in geography, a hill and cape of Scotland, on the SE. extremity of Caithneſs, the boundary between that county and Sutherland. On its top are relics of an ancient fort. Lon. 0. 16. W. of Edin. Lat. 58. 54. N.

* *To* ORDAIN. *v. a.* [*ordino*, Lat. *ordonner*, Fr.] 1. To appoint; to decree.—

Know the cauſe why muſick was *ordain'd*;
Was it not to refreſh the mind of man? *Shak.*

—Jeroboam *ordained* a feaſt. 1 *Kings*, xii. 32.—As many as were *ordained* to eternal life, believed. *Acts*.—It is he which was *ordained* of God to be the judge of quick and dead. *Acts*, x. 42.—

To ſouls oppreſs'd and dumb with grief,
The gods *ordain* this kind relief. *Waller.*
The ſcene of death, and place *ordain'd* for puniſhment. *Dryden.*
My reaſon bends to what thy eyes *ordain*. *Prior.*

2. To eſtabliſh; to ſettle; to inſtitute.—

Mulmutius
Ordain'd our laws. *Shak.*

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—I will *ordain* a place for Israel. 1 *Chron.* xvii. 9.
God from Sinai descending will himself
Ordain them laws. *Milton.*
Some laws *ordain*, and some attend the choice
Of holy senates, and elect by voice. *Dryden.*
2. To set in an office.—All signified unto you by a man, who is *ordained* over the affairs. *Esther* xiii. 6. 4. To invest with ministerial function, or sacerdotal power. Meletius was *ordained* by Arian bishops. *Stillingfleet.*

* ORDAINER. *n. s.* [from *ordain.*] He who ordains.

ORDAVAR, a town of Persian Armenia.

(1.) * ORDEAL. *n. s.* [*ordal*, Sax. *ordalium*, low Lat. *ordalie*, Fr.] A trial by fire or water, by which the person accused appealed to heaven, by walking blindfold over hot bars of iron; or being thrown, I suppose, into the water; whence the vulgar trial of witches.—Their *ordeal* laws they used in doubtful cases. *Hakewill.*—In the time of king John, the purgation *per ignem et aquam*, or the trial by *ordeal* continued; but it ended with this king. *Hale.*

(2.) ORDEAL was an ancient form of trial. See TRIAL. It was an appeal to the immediate interposition of divine power, and was peculiarly distinguished by the appellation of *judicium Dei*; and sometimes *vulgaris purgatio*, to distinguish it from the *canonical* purgation, which was by the oath of the party.

(3.) ORDEAL, ANTIQUITY OF TRIAL BY. That the purgation of ordeal, of some one kind or other, is very ancient, admits not of a doubt; and that it was very universal in the times of superstitious barbarity, is equally certain. It seems even to have been known to the ancient Greeks. And Grotius gives us many instances of water ordeal, in Bithynia, Sardinia, and other places.

(4.) ORDEAL, METHODS OF TRIAL BY, IN EUROPE. There were two sorts of it more common than the rest, in Europe, by fire, and by water. The former was confined to persons of higher rank, the latter to the common people. Both these might be performed by deputy; but the principal was to answer for the success of the trial, the deputy only venturing some corporal pain, for hire, or perhaps for friendship. The *Fire Ordeal* was performed either by taking up in the hand, unhurt, a piece of red-hot iron, 1, 2, or 3 lb. weight; or else by walking, barefoot, and blindfold, over 9 red-hot plough-shares, laid lengthwise at unequal distances: and if the party escaped being hurt, he was adjudged innocent; but if it happened otherwise, as without collusion it usually did, he was then condemned as guilty. *Water Ordeal* was performed, either by plunging the bare arm up to the elbow in boiling water, and escaping unhurt thereby, or by casting the person suspected into a river or pond of cold water; and if he floated therein without any action of swimming, it was deemed an evidence of his guilt; but if he sunk he was acquitted. It is easy to trace out the traditional relics of this water ordeal, in the ignorant barbarity still practised in many countries to discover witches, by casting them into a pool of water, and drowning them to prove their innocence. In the Eastern empire the fire ordeal was used for the same purpose, by the emperor Theodore Lascaris, who, attributing his sickness to magic, caused all those whom he suspected to handle the hot iron: thus joining (as has been well remarked) to the most dubious crime in the world, the most dubious proof of innocence. Besides these methods of trial, there were some others common in Europe; as the judicial combat, the ordeal of the cross, and the ordeal of the corsned. (See BATTLE, § 2—4; and CORSNED.) The judicial combat was well suited to the genius and spirit of fierce and warlike nations, and was one of the most ancient and universal modes of trial. It was exceedingly common in Germany in very remote ages. It was also used in some countries on the continent at pretty early periods: it is not, however, mentioned in any of the Anglo-Saxon laws; and it does not appear to have been much used in England till after the Conquest. There are, however, two remarkable instances of it recorded in Dr *Henry's History of Great Britain*, to which we shall refer the inquisitive reader. We need scarcely add, that this detestable form of trial was the foundation of the no less detestable crime of duelling, which disgraces our age and nation. See DUEL. It was so much the custom in the middle ages of Christianity, to respect the *cross* even to superstition, that it would have been indeed wonderful if the same ignorant bigotry had not converted it into an ordeal: accordingly we find it used for this purpose, in so many different ways as almost to preclude description. Dr Henry gives the following account of it: "In criminal trials, the judgment of the cross was commonly thus conducted. When the prisoner had declared his innocence upon oath, and appealed to the judgment of the cross, two sticks were prepared exactly like one another; the figure of the cross was cut on one of these sticks, and nothing on the other: each of them was then wrapped up in a quantity of fine white wool, and laid on the altar, or on the relicks of the saints; after which a solemn prayer was put up to God, that he would be pleased to discover, by evident signs, whether the prisoner was innocent or guilty. These solemnities being finished, a priest approached the altar, and took up one of these sticks, which was uncovered with much anxiety. If it was the stick marked with the cross, the prisoner was pronounced innocent; if it was the other, he was declared guilty. When the judgment of the cross was appealed to in civil causes, the trial was conducted in this manner: The judges, parties, and all concerned, being assembled in a church, each of the parties chose a priest, the youngest and stoutest that he could find, to be his representative in the trial. These representatives were then placed one on each side of some famous crucifix; and at a signal given, they both at once stretched their arms at full length, so as to form a cross with their body. In this painful posture they continued to stand while divine service was performing; and the party whose representative dropped his arms first lost his cause. These and the like relics of superstition and barbarism, were abolished in England, (as had been done in Denmark above a century before) by act of parliament 3 Hen. III. according to Sir Edward Coke, or rather by an order of the king in council.

(3.) ORDEAL

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(5.) ORDEAL, METHODS OF TRIAL BY, IN HINDOSTAN. Ordeal seems to be carried to a greater height among the Hindoos, than ever it has been in any nation or among any people, however rude or barbarous; for in a paper of the Asiatic Researches communicated by the celebrated Warren Hastings, Esq. we find that the *trial by ordeal* among them is conducted in *nine* different ways: viz. 1. by the balance; 2. by fire; 3. by hot oil; 4. by images: 5. by poison; 6. by red-hot iron; 7. by rice; 8. by the Cosha; 9. by water.

I. ORDEAL BY BALANCE is thus performed: The beam having been previously adjusted, the cord fixed, and both scales made perfectly even, the person accused and a Pandit fast a whole day; then, after the accused has been bathed in sacred waters, the *homa*, or oblation, presented to fire, and the deities worshipped, he is carefully weighed; and, when he is taken out of the scale, the Pandits prostrate themselves before it, pronounce a certain *mantra* or incantation, agreeably to the Sastras, and, having written the substance of the accusation on a piece of paper, bind it on his head. Six minutes after, they place him again in the scale; and, if he weigh more than before, he is held guilty; if less, innocent; if exactly the same, he must be weighed a third time; when, as it is written in the *Bhaegbera*, there will certainly be a difference in his weight. Should the balance, though well fixed, break down, this would be considered as a proof of his guilt.

II. ORDEAL BY FIRE. In this an excavation, 9 hands long, 8 spans broad, and one span deep, is made in the ground, and filled with a fire of pippal wood: into this the person accused must walk barefooted; and, if his foot be unhurt, they hold him blameless; if burned, guilty.

III. ORDEAL BY HOT OIL is very simple, but preceded by certain superstitious ceremonies. It is thus performed: The ground appointed for the trial is cleared and rubbed with cow-dung; and the next day at sun-rise the *Pandit* worships Ganesa or the Hindoo Janus, presents his oblations, and pays adoration to other deities, conformably to the *Sastras*: then, having read the incantation prescribed, he places a round pan of gold, silver, copper, iron, or clay, with a diameter of sixteen fingers, and four fingers deep; and throws into it one *ser*, or eighty *sicca* weight, of clarified butter or oil of *sesamum*. After this a ring of gold, or silver, or iron, is cleaned and washed with water, and cast into the oil; which they proceed to heat, and when it is very hot put into it a fresh leaf of *pippala*, or of *bikwa*: when the leaf is burned, the oil is known to be sufficiently hot. Then, having pronounced a *mantra* over the oil, they order the party accused to take the ring out of the pan; and if he take it out without being burned, or without a blister on his hand, his innocence is considered as proved; if not, his guilt.

IV. ORDEAL BY IMAGES. To perform the ordeal by *dharmaroh*, which is the name of the *sloca* appropriated to this mode of trial, either an image, named *Dharma*, or the genius of justice, is made of silver, and another, called *Adharma*, of clay or iron, both of which are thrown into a large earthen jar; and the accused, having thrust his hand into it, is acquitted if he bring out the silver image, but condemned if he draw forth the iron. Or, the figure of a deity is painted on white cloth, and another on black; the first of which they name *dharma*, and the second *adharma*: these are severally rolled up in cow-dung; and thrown into a large jar without having ever been shown to the accused; who must put his hand into the jar, and is acquitted or convicted as he draws out the figure on white or on black cloth.

V. ORDEAL BY POISON. There are two sorts of trial by poison; first, the Pandits having performed their homa, and the person accused his ablution, two *rettis* and a half, or seven barley-corns, of *vishanaga*, a poisonous root, or of *sanc'-hya*, that is, white arsenic, are mixed in eight *masbas*, or 64 *rettis*, of clarified butter, which the accused must eat from the hand of a brachman: if the poison produce no visible effect, he is absolved; otherwise, condemned. Secondly, the hooded snake, called *naga*, is thrown into a deep earthen pot, into which is dropped a ring, a seal, or a coin: this the person accused is ordered to take out with his hand; and, if the serpent bite him, he is pronounced guilty; if not, innocent.

VI. ORDEAL BY RED-HOT IRON. In this trial they make an *iron ball*, or the *head of a lance*, red-hot, and place it in the hands of the person accused; who, if it burn him not, is judged guiltless.

VII. ORDEAL BY RICE. When several persons are suspected of theft, some dry rice is weighed with the sacred stone called *salgram*, or certain *slocas* are read over it; after which the suspected persons are severally ordered to chew a quantity of it; as soon as they have chewed it, they are to throw it on some leaves of *pippal*, or, if none be at hand, on some *Bhurja patra*, or bark of a tree from Nepal or Cashmir. The man, from whose mouth the rice comes dry or stained with blood, is held guilty; the rest are acquitted.

VIII. ORDEAL BY THE COSHA, is as follows: the accused is made to drink three draughts of the water in which the images of the sun, of Devi, and other deities, have been washed for that purpose; and if within 14 days he has any sickness or indisposition, his crime is considered as proved.

IX. ORDEAL BY WATER is performed by causing the person accused to stand in a sufficient depth of water, either flowing or stagnant, to reach his navel; but care should be taken, that no ravenous animal be in it, and that it be not moved by much air: a brahman is then directed to go into the water, holding a staff in his hand; and a soldier shoots three arrows on dry ground from a bow of cane: a man is next dispatched to bring the arrow which has been shot farthest; and, after he has taken it up, another is ordered to run from the edge of the water; at which instant the person accused is told to grasp the foot or the staff of the brahman, who stands near him in the water, and immediately to dive into it. He must remain under water, till the two men, who went to fetch the arrows, are returned; for, if he raise his head or body above the surface, before the arrows are brought back, his guilt is considered as fully proved. In the villages near Benares, it is the practice for the person who is to be tried by this kind of ordeal, to stand in water up to his navel, and then, holding the foot of a brahman, to dive

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dive under it as long as a man can walk 50 paces very gently; if before the man has walked thus far, the accuſed riſe above the water, he is condemned; if not, acquitted.

(6.) ORDEAL, METHODS OF TRIAL BY, IN MALABAR and SIAM. A very peculiar ſpecies of water ordeal is ſaid to prevail among the Indians on the coaſt of Malabar. A perſon accuſed of an enormous crime is obliged to ſwim over a large river abounding with crocodiles; and if he eſcapes unhurt, he is eſteemed innocent. At Siam, beſides the uſual methods of fire and water ordeal, both parties are ſometimes expoſed to the fury of a tiger let looſe for that purpoſe; and if the beaſt ſpares either, that perſon is accounted innocent; if neither, both are held to be guilty; but if he ſpares both, the trial is incomplete, and they proceed to a more certain criterion.

(7.) ORDEAL, TRICKS BY WHICH PEOPLE ESCAPED, IN TRIALS BY. Upon this ſubject, Dr Henry has the following remarks: "If we ſuppoſe that few or none eſcaped conviction who expoſed themſelves to thoſe fiery trials, we ſhall be very much miſtaken. For the hiſtories of thoſe times contain innumerable examples of perſons plunging their naked arms into boiling water, handling red-hot balls of iron, and walking upon burning ploughſhares without receiving the leaſt injury. Many learned men have been much puzzled to account for this, and diſpoſed to think that Providence graciouſly interpoſed, in a miraculous manner, for the preſervation of injured innocence. But if we examine every circumſtance of thoſe fiery ordeals with due attention, we ſhall ſee ſufficient reaſon to ſuſpect that the whole was a groſs impoſition on the credulity of mankind. The accuſed perſon was committed wholly to the prieſt, who was to perform the ceremony, 3 days before the trial, in which he had time enough to bargain with him for his deliverance, and give him inſtructions how to act his part. On the day of trial, no perſon was permitted to enter the church, but the prieſt and the accuſed, till after the iron was heated, when 12 friends of the accuſer, and 12 of the accuſed, and no more, were admitted, and ranged along the wall on each ſide of the church, at a reſpectful diſtance. After the iron was taken out of the fire, ſeveral prayers were ſaid; the accuſed drank a cup of holy water, and ſprinkled his hand with it, which might take a conſiderable time, if the prieſt was indulgent. The ſpace of 9 feet was meaſured by the accuſed himſelf with his own feet, and he would probably give but ſcanty meaſure. He was obliged only to touch one of the marks with the toe of his right foot, and allowed to ſtretch the other foot as far towards the other mark as he could, ſo that the conveyance was almoſt inſtantaneous. His hand was not immediately examined, but wrapped in a cloth prepared for that purpoſe three days. May we not then, from all theſe precautions, ſuſpect that theſe prieſts were in poſſeſſion of ſome ſecret that ſecured the hand from the impreſſions of ſuch a momentary touch of hot iron, or removed all appearances of theſe impreſſions in three days; and that they made uſe of this ſecret when they ſaw reaſon? Such readers as are curious in matters of this kind may find two different directions for making ointments that will have this effect, in the work here quoted. (*Du Cange, Gloſſ.* t. 3. p. 397.) What greatly ſtrengthens theſe ſuſpicions is, that we meet with no example of any champion of the church who ſuffered the leaſt injury from the touch of hot iron in this ordeal; but when any one was ſo fool-hardy as to appeal to it, or to that of hot water, with a view to deprive the church of any of her poſſeſſions, he never failed to burn his fingers, and loſe his cauſe."

(1.)* ORDER, *n. ſ.* [*ordo*, Lat. *ordre*, Fr.] 1. Method; regular diſpoſition.—To know the true ſtate of Solomon's houſe, I will keep this *order*. *Bacon's New Atlantis.*—As St Paul was full of the doctrine of the goſpel; ſo it lay all clear and in *order*, open to his view. *Locke.* 2. Eſtabliſhed proceſs.—The moderator, when either of the diſputants breaks the rules, may interpoſe to keep them to *order*. *Watts.* 3. Proper ſtate.—Any of the faculties wanting, or out of *order*, produce ſuitable defects in men's underſtandings. *Locke.* 4. Regularity; ſettled mode.—

This *order* with her ſorrow ſhe accords,
Which orderleſs all form of *order* brake. *Daniel.*

—They are ſuch fathers as the ſons maintain, which is againſt the *order* of Nature. *Davenant.* 5. Mandate; precept; command.—

Give *order* to my ſervants, that they take
No notice of our being abſent. *Shak.*

—If the lords of the council iſſued out any *order* againſt them, or if the king ſent a proclamation for their repair to their houſes, preſently ſome noblemen publiſhed a proteſtation againſt thoſe *orders* and proclamations. *Clarendon.*—Upon this new fright, an *order* was made by both houſes for diſarming all the papiſts in England; upon which, and the like *orders*, though ſeldom any thing was after done, yet it ſerved to keep up the apprehenſions in the people. *Clarendon.*—When Chriſtians became a diſtinct body, courts were ſet up by the *order* of the Apoſtles themſelves, to miniſter judicial proceſs. *Kettleworth.*—I have received an *order* under your hand for a thouſand pounds. *Tatler.* 6. Rule; regulation.—The church hath authority to eſtabliſh that for an *order* at one time, which at another time it may aboliſh. *Hooker.* 7. Regular government.—

The night, their number, and the ſudden act
Would daſh all *order*. *Daniel.*

—As there is no church where there is no *order*, no miniſtry; ſo where the ſame *order* and miniſtry is, there is the ſame church. *Pearſon.* 8. A ſociety of dignified perſons diſtinguiſhed by marks of honour.—

The ſeveral chairs of *order* look you ſcour,
With juice of balm. *Shak.*

—Princes many times ſet their hearts upon toys; ſometimes upon a building; ſometimes upon erecting of an *order*. *Bacon.*

She left immortal trophies of her fame,
And to the nobleſt *order* gave the name. *Dryden.*

Various *orders* various enſigns bear. *Granville.*

9. A rank or claſs.—The king commanded the high prieſt and the prieſts of the ſecond *order*, to bring forth out of the temple all the veſſels. 2 *Kings*, xxiii. 4.—

Th' Almighty ſeeing,
From his tranſcendent ſeat the ſaints among,

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To those bright *orders* utter'd thus his voice. *Milt.* —Like use you make of the equivocal word dignity, which is of *order*, or office. *Waterland.* 10. A religious fraternity.—

Find a bare-foot brother out,
One of our *order*, to associate me,
Here visiting the sick. *Shak. Rom. and Jul.*

11. [In the plural.] Hierarchical state. If the faults of men in *orders* are only to be judged among themselves, they are all in some sort parties. *Dryden.*—That he might dedicate himself more entirely to religion, he entered into holy *orders*. *Spectator.*—When Ouranius first entered into holy *orders*, he had haughtiness in his temper. *Law.* 12. Means to an end.—Virgins must remember, that the virginity of the body is only excellent in *order* to the purity of the soul. *Taylor's Rule.*—In *order* to the better discharge of these duties, we should govern ourselves in the use of sensual delights with temperance. *Tillotson.*—The best knowledge is that which is of greatest use in *order* to our eternal happiness. *Tillotson* —What we see is in *order* only to what we do not see. *Atterbury.*—One man pursues power in *order* to wealth, and another wealth in *order* to power, which last is the safer way *Swift.* 13. Measures; care.—It were meet you should take some *order* for the soldiers. *Spenser on Ireland.*—

Provide me soldiers,
Whilst I take *order* for mine own affairs. *Shak.*

—The money promised unto the king, he took no *order* for. 2 *Mac.* iv. 27.—If any of the family be distressed, *order* is taken for their relief. *Bacon.* 14. [In architecture.] A system of the several members, ornaments, and proportions of columns and pilasters; or it is a regular arrangement of the projecting parts of a building, especially those of a column; so as to form one beautiful whole: or *order* is a certain rule for the proportions of columns, and for the figures which some of the parts ought to have, on the account of the proportions that are given them. There are five *orders* of columns; three of which are Greek, *viz.* the Doric, Ionic, and Corinthian; and two Italian, *viz.* the Tuscan and Composite. The whole is composed of two parts at least, the column and the entablature, and of four parts at the most; where there is a pedestal under the columns, and one acroter or little pedestal on the top of the entablature. The column has three parts: the base, the shaft, and the capital, which parts are all different in the several *orders*. In the Tuscan *order*, any height being given, divide it into ten parts and their quarters, called diameters, by diameters is meant the thickness of the shaft at the bottom, the pedestal having two; the column with base and capital, 7; and the entablature one and three quarters. In the Doric *order*, the whole height being given, is divided into 12 diameters or parts, and one third; the pedestal having two and one third, the column 8, and the entablature two. In the Ionic *order*, the whole height is divided into 13 diameters and a half, the pedestal having two and two thirds, the column 9, and the entablature one and 4 fifths. In the Corinthian *order*, the whole height is divided into 14 diameters and a half, the pedestal having three, the column $9\frac{1}{2}$, and the entablature 2. In the composite *order*, the whole height is divided into 15 diameters and one third; the pedestal having three and one third, the column ten, and the entablature two. In a colonnade or range of pillars, the intercolumniation or space between columns in the Tuscan *order*, is 4 diameters. In the Doric *order*, two and three quarters; in the Ionic *order*, two and a quarter; in the Corinthian *order*, two; and in the composite *order*, one and a half. *Builder's Dict.*

(2.) ORDER, (§ 1. *def.* 9.), is also used for a division of the members of a state; with regard to precedency, &c. In this sense, order is a kind of dignity, which, under the same name, is common to several persons; and which, of itself, does not give them any particular public authority, but only rank, and a capacity of arriving at honours and employments. Or it may be defined, a dignity attended with an aptitude for public employ; by which it is distinguished from an office, which is the exercise of a public trust. In this sense, the NOBILITY, CLERGY, &c. are orders.

(3.) ORDER, (§ 1, *def.* 14.) See ARCHITECTURE, *Index*.

(4.) ORDER, in natural history, is used for a division of plants or animals. See BOTANY, *Index*; ENTOMOLOGY, *Sect.* V.; ORNITHOLOGY, ZOOLOGY, &c.

(5.) ORDER, in rhetoric. See ORATORY, § 143, —149.

(6.) ORDER is also the title of certain ancient books, containing the divine office, with the order and manner of its performance. The Roman order is that wherein are laid down the ceremonies which obtain in the Romish church. See RITUAL.

(7.) ORDER, BLACK, denoted the order of BENEDICTINES, so named from the colour of their habit; but now disused.

8. ORDER, GREY, was the ancient name of the CISTERTIANS; but, since the change of the habit, the name suits them no more.

(9.) ORDERS, in a military sense, all that is lawfully commanded by superior officers. Orders are given out every day, whether in camp, garrison, or on a march, by the commanding officer; which orders are afterwards given to every officer in writing by their respective serjeants.

(10.) ORDERS, HOLY, or ORDERS by way of eminency, denote a character peculiar to ecclesiastics, whereby they are set apart for the ministry. See ORDINATION. This the Romanists make their sixth sacrament. In no reformed church are there more than three orders; viz. bishops, priests, and deacons. In the Roman church there are seven, exclusive of the episcopate; all which the council of Trent enjoins to be received and believed, on pain of anathema. They are distinguished into petty or secular orders, and major or sacred orders.

1. ORDERS, PETTY, or MINOR, are 4; viz. those of doorkeeper, exorcist, reader, and acolyth. Those in petty orders may marry without a dispensation; in effect, the petty orders are looked on as little other than formalities, and as degrees necessary to arrive at the higher orders. Yet the council of Trent is very serious about them; enjoins that none be admitted into them without understanding Latin; and recommends it to the bishops, to observe the intervals of conferring them, that the persons

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perſons may have a ſufficient time to exerciſe the function of each order; but it leaves the biſhops a power of diſpenſing with theſe rules; ſo that the four orders are uſually conferred the ſame day, and only make the firſt part of the ceremony of ordination. The Greeks diſavow theſe petty orders, and paſs immediately to the ſubdiaconate; and the reformed to the diaconate. Their firſt riſe Fleury dates in the time of the emperor Juſtinian. There is no call nor benefice required for the four petty orders; and even a baſtard may enjoy them without any diſpenſation; nor does a ſecond marriage diſqualify.

ii. ORDERS, SACRED, or MAJOR, are three; viz. thoſe of deacon, prieſt, and biſhop. The council of Trent, retrieving the ancient diſcipline, forbids any perſon being admitted to the major orders, unleſs he be in peaceable poſſeſſion of a benefice ſufficient for a decent ſubſiſtence; allowing no ordinations on patrimonies or penſions, except where the biſhop judges it for the ſervice of the church. A perſon is ſaid to be promoted to orders *per ſaltum*, when he has not before paſſed the inferior orders. The council of Conſtantinople forbids any biſhop being ordained without paſſing all the degrees; yet church hiſtory records inſtances of biſhops conſecrated without having paſſed the order of prieſthood; and Panormas ſtill thinks ſuch an ordination valid.

(11.) ORDERS, MILITARY, are companies of knights, inſtituted by kings and princes, either for defence of the faith, or to confer marks of honour, and make diſtinctions among their ſubjects.

(12.) ORDERS, RELIGIOUS, are congregations or ſocieties of monaſtics, living under the ſame ſuperior, in the ſame manner, and wearing the ſame habit.—Religious orders may be reduced to five kinds; viz. monk, canons, knights, mendicants, and regular clerks. See CANON, MONK, &c. F. Mabillon proves, that, till the 9th century, almoſt all the monaſteries in Europe followed the rule of St Benedict; and that the diſtinction of orders did not commence till upon the re-union of ſeveral monaſteries into one congregation; that St Odo, abbot of Cluny, firſt began this re-union, bringing ſeveral houſes under the dependence of Cluny; that, a little afterwards, in the 11th century, the Camaldulians aroſe; then, by degrees, the congregation of Vallombroſa; the Ciſtercians, Carthuſians, Auguſtines; and, at laſt, in the 13th century, the Mendicants. He adds, that Lupus Servatus, abbot of Ferrieres, in the ninth century, is the firſt that ſeems to diſtinguiſh the order of St Benedict from the reſt, and to ſpeak of it as a particular order.

(13.) ORDERS, RELIGIOUS MILITARY, are thoſe inſtituted in defence of the faith, and privileged to ſay maſs: and who are prohibited marriage, &c. Of this kind are the knights of Malta, or of St John of Jeruſalem. Such alſo were the knights Templars, the knights of Calatrava, knights of St Lazarus, Teutonic knights, &c. See MALTA, TEMPLAR, &c. F. Putignani accounts thoſe military orders where marriages is not allowed, real religious orders. Papebroch ſays, it is vain to ſearch for military orders before the 12th century.

(14.) ORDER, WHITE, denotes the order of regular canons of ST AUGUSTINE, ſo named from the colour of their habit.

(1.) * *To* ORDER. *v. a.* [from the noun.] 1. To regulate; to adjuſt; to manage; to conduct.—To him that *ordereth* his converſation aright will I ſhew the ſalvation of God. *Pſ.* l. 23.—As the ſun when it ariſeth in the heaven, ſo is the beauty of a good wife in the *ordering* of her houſe. *Eccluſ.* xxvi. 16.—Thou haſt *ordered* all in meaſure, number, and weight, *Wiſd.* xi. 20.—Bias being aſked how a man ſhould *order* his life? anſwered, as if a man ſhould live long, or die quickly. *Bacon.* 2. To manage; to procure.—

The kitchen clerk that hight digeſtion,
Did *order* all the cates in ſeemly wiſe. *Spenſer.*

3. To methodiſe; to diſpoſe fitly.—Theſe were the *orderings* of them in their ſervice. 1 *Chron.* xxiv. 19. 4. To direct; to command. 5. To ordain to ſacerdotal function.—The book requireth due examination, and giveth liberty to object any crime againſt ſuch as are to be *ordered*. *Whitgift.*

(2.) * *To* ORDER. *v. n.* To give command; to give direction.—

So ſpake the univerſal Lord, and ſeem'd
So *ordering*. *Milton.*

* ORDERER. *n. ſ.* [from *order*.] One that orders, methodiſes, or regulates.—That there ſhould be a great diſpoſer and *orderer* of all things, a wiſe rewarder and puniſher of good and evil, hath appeared ſo equitable to men, that they have concluded it neceſſary. *Suckling.*

* ORDERLESS. *adj.* [from *order*.] Diſorderly; out of rule.—

All form is formleſs, order *orderleſs*,
Save what is oppoſite to England's love. *Shak.*

* ORDERLINESS. *n. ſ.* [from *orderly*.] Regularity; methodicalneſs.

(1.) * ORDERLY. *adj.* [from *order*.] 1. Methodical; regular.—

The book requireth but *orderly* reading. *Hooker.*

2. Obſervant of method.—

Wondrous *orderly*,
With manly haſte, diſpatcht his houſwifery. *Chapman.*

3. Not tumultuous; well regulated.—Balfour, by an *orderly* and well-governed march, paſſed in the king's quarters without any conſiderable loſs. *Clarendon.* 4. According with eſtabliſhed method.—As for the orders eſtabliſhed, ſith the law of Nature, of God, and man, do all favour that which is in being, till *orderly* judgment of deciſion be given againſt it, it is but juſtice to exact obedience of you. *Hooker.*—A clergy reformed from popery perfected this reformation by quiet and *orderly* methods. *Atterbury.*

(2.) * ORDERLY. *adv.* [from *order*.] Methodically; according to rule.—All parts of knowledge have been thought by wiſe men to be then moſt *orderly* delivered and proceeded in, when they are drawn to their firſt original. *Hooker.*—

Aſk him his name, and *orderly* proceed
To ſwear him. *Shak.*

Make it *orderly* and well,
It is walled with brick and ſtone, intermixed
orderly. *Sandys.*

—How ſhould thoſe active particles, juſtled by the occurſion of other bodies, whereof there is an infinite ſtore, ſo *orderly* keep their cells without any alteration of ſite? *Glanville.*—In the body, when

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when the principal parts, the heart and liver, do their offices, and all the inferior ſmaller veſſels act *orderly* and duly, there ariſes a ſweet enjoyment upon the whole, which we call health. *South.*

ORDESSUS, a river of Scythia, which runs into the Iſter. *Herodot.*

ORDEUICES. See ORDOVICES.

ORDIE, LOCH, a lake of Perthſhire, in the pariſh of Dunkeld, two miles in circumference.

ORDIK, a town of European Turkey, in Beſſarabia; eight miles N. of Iſmael.

* ORDINABLE. *adj.* [*ordino*, Lat.] Such as may be appointed.—That courſe of living which is moſt perfectly agreeable to our nature, and by the mercy of God *ordinable* to eternal bliſs. *Hamm.*

(1.) * ORDINAL. *adj.* [*ordinal*, Fr. *ordinalis*, Lat.] Noting order; as, ſecond, third.—Add to the epact the day of the month, and the *ordinal* number of that month from March inclusive. *Holder.*

(2.) * ORDINAL. *n. ſ.* [*ordinal*, Fr. *ordinale*, Lat.] A ritual; a book containing orders. *Ainſ.*

(3.) ORDINAL. See RITUAL.

(1.) * ORDINANCE. *n. ſ.* [*ordonnance*, Fr.] 1. Law; rule; preſcript.—It ſeemeth hard to plant any ſound *ordinance*, or reduce them to a civil government. *Spenſer.*

Let Richard and Elizabeth,
The true ſucceeders of each royal houſe,
By God's fair *ordinance* conjoin together! *Shak.*

2. Obſervance commanded.—One *ordinance* ought not to exclude the other. *Taylor.* 3. Appointment.—

When one but of my *ordinance* ſtood up,
To ſpeak of peace or war. *Shak.*

4. A cannon. It is now generally written for diſtinction *ordnance*; its derivation is not certain; perhaps when the word *cannon* was firſt introduced, it was miſtaken for *canon*, and ſo not improperly tranſlated *ordinance*. It is commonly uſed in a collective ſenſe for more cannons than one.—

Caves and womby vaultages of France,
Shall chide your treſpaſs and return your mock,
In ſecond accept to his *ordinance*. *Henry V.*

(2.) *An* ORDINANCE, or ORDONNANCE, is a ſtatute, or command of a ſovereign or ſuperior; thus the acts of parliament are ſometimes termed *ordinances of parliament*, as in the parliament rolls. Though in ſome caſes we find a difference made between the two; ordinances being only temporary things, by way of prohibition; and capable of being altered by the commons alone; whereas an act is a perpetual law, and cannot be altered but by king, lords, and commons.—Coke aſſerts that an ordinance of parliament differs from an act, as the latter can only be made by the king, and the threefold conſent of the eſtates; whereas the former may be made by one or two of them. In the ci-devant French juriſprudence, ordonnances were ſuch laws as were eſtabliſhed by the king's authority alone.

(3.) ORDINANCE OF THE FOREST, is a ſtatute made in the 34th year of Henry I. relating to foreſt matters.

* ORDINARILY. *adv.* [from *ordinary*.] 1. According to eſtabliſhed rules; according to ſettled method.—We are not to look that the church ſhould change her public laws and ordinances, made according to that which is judged *ordinarily*, and commonly fitteſt for the whole. *Hooker.*—Springs and rivers do not derive the water which they *ordinarily* refund, from rain. *Woodward.* 2. Commonly; uſually.—The inſtances of human ignorance were not only clear ones, but ſuch as are not ſo *ordinarily* ſuſpected. *Glanville.*—Prayer ought to be more than *ordinarily* fervent and vigorous before the ſacrament. *South.*

(1.) * ORDINARY. *adj.* [*ordinarius*, Latin.] 1. Eſtabliſhed; methodical; regular.—Though in arbitrary governments there may be a body of laws obſerved in the *ordinary* forms of juſtice, they are not ſufficient to ſecure any rights to the people. *Addiſon.*—The ſtanding *ordinary* means of conviction failing to influence them. *Atterbury.*—We fall into ſuch irregularities of life, as by the *ordinary* means of grace we ſhould have power to avoid. *Law.* 2. Common; uſual.—Over much haſte might ſeem to proceed of the *ordinary* miſlike between ſiſters in law. *Sidney.*—It is ſufficient that Moſes have the *ordinary* credit of an hiſtorian given him. *Tillotſon.*—This deſignation of the perſon, our author is more than *ordinary* obliged to take care of. *Locke.*—There is nothing more *ordinary* than children's receiving into their minds propoſitions from their parents. *Locke.*—Method is not leſs requiſite in *ordinary* converſation than in writing. *Addiſon.* 3. Mean; of low rank.—Theſe are the paths wherein ye have walked, that are of the *ordinary* ſort of men. *Hooker.*—Men of common capacity, and but *ordinary* judgment, are not able to diſcern what things are fitteſt. *Hooker.*—Every *ordinary* reader, upon the publiſhing of a new poem, has will and ill-nature enough to turn ſeveral paſſages of it into ridicule. *Addiſon.*—My ſpeculations, after ſome time, come to the market in great quantities, and are every *ordinary* man's money. *Addiſon.*—You will wonder how ſuch an *ordinary* fellow as Wood could get his majeſty's broad ſeal. *Swift.* 4. Ugly; not handſome; as, ſhe is an *ordinary* woman.

(2.) * ORDINARY. *n. ſ.* 1. Eſtabliſhed judge of eccleſiaſtical cauſes.—

All their pariſhioners they had conſtrain'd,
Who to the *ordinary* of them complain'd.
Hubberd.

—Law hath referred the whole diſpoſition and redreſs thereof to the *ordinary* of the place. *Hooker.* 2. Settled eſtabliſhment.—Spain had no other wars ſave thoſe which were grown into an *ordinary*. *Bacon.* 3. Actual and conſtant office.—The ſummer following he was admitted in *ordinary*. *Wotton.*—He was ſoon after made chaplain in *ordinary* to his majeſty. *Fell.* 4. Regular price of a meal.—

Our courteous Antony,
Being barber'd ten times o'er, goes to the feaſt;
And for his *ordinary* pays his heart
For what his eyes eat only. *Shak.*

5. A place of eating eſtabliſhed at a certain price.—All the odd words they have picked up in a coffee-houſe, or a gaming *ordinary*, are produced as flowers of ſtyle. *Swift.*

(3.) ORDINARY, in common or canon law (§ 2, *def.* 1.) means one who has ordinary or immediate juriſdiction in matters eccleſiaſtical, in any place. In

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In this ſenſe archdeacons are ordinaries, but the appellation is moſt frequently applied to the biſhop of the dioceſe, who has of courſe the ordinary eccleſiaſtical juriſdiction, and the collation to benefices within ſuch dioceſe. There are ſome chapels, chapters, abbeys, &c. exempted from the juriſdiction of the ordinary. The archbiſhop is ordinary of the whole province, to viſit, and receive appeals from the inferior judicatures. The Romiſh writers on canon-law call the pope by way of eminence *ordinary of ordinaries*, ſince by the Lateran council he has uſurped the right of collating, by probation, to all benefices, in excluſion of the common collators.

(4.) ORDINARY, in naval language, denotes the eſtabliſhment of the perſons employed by government to take charge of the ſhips of war, which are laid up in the ſeveral harbours adjacent to the royal dock-yards. Theſe are principally compoſed of the warrant officers of the ſaid ſhips, as the gunner, boatſwain, carpenter, deputy purſer, and cook, and three ſervants. There is beſides a crew of labourers inrolled in the liſt of the ordinary, who paſs from ſhip to ſhip occaſionally, to pump, moor, remove, or clean them, whenever it is neceſſary. The term *ordinary* is alſo applied ſometimes to the ſhips themſelves: it is likewiſe uſed to diſtinguiſh the inferior ſailors from the moſt expert and diligent. The latter are rated *able* on the navy books, and have 1l. 4s. *per* month; whereas thoſe who are rated *ordinary* have only 19s. *per* month.

(5.) ORDINARY, (§ 2, *def.* 3.) is alſo a term applied to ſeveral officers in the king's houſehold, who attend on common occaſions, as phyſician in ordinary, &c.

(6.) ORDINARY, AN AMBASSADOR, OR ENVOY IN, is one ſent to reſide in the court of a foreign prince. See AMBASSADOR.

(7.) ORDINARY, HONOURABLE. See HERALDRY, *Chap.* III. § I.

(8.) ORDINARY, LORDS, in the court of Seſſion. See LAW, *Part* III, *Chap.* I. *Sect.* II. § 4—7.

(9.) ORDINARY OF ASSIZES AND SESSIONS, was a deputy of the biſhop of the dioceſe, anciently appointed to give malefactors their neck verſes, and judge whether they read or not; alſo to perform divine ſervice for them, and aſſiſt in preparing them for death. So the

(10.) ORDINARY OF NEWGATE is one who is attendant in ordinary upon the condemned malefactors in that priſon, to prepare them for death; and he records the behaviour of ſuch perſons.

(1.) * ORDINATE. *adj.* [*ordinatus*, Lat.] Regular; methodical.—*Ordinate* figures are ſuch as have all their ſides, and all their angles equal. *Ray on the Creation.*

(2.) ORDINATES, in geometry and conics, are lines drawn from any point of the circumference of an ellipſis, or other conic ſection, perpendicularly acroſs the axis, to the other ſide. See CONIC SECTIONS, *Index.*

* *To* ORDINATE, *v. a.* [*ordinatus*, Lat.] To appoint.—

With full conſent this man did *ordinate*
The heir apparent to the crown. *Daniel.*

(1.)* ORDINATION. *n. ſ.* [*ordinatio*, Lat. from *ordinate.*] 1. Eſtabliſhed order or tendency, conſequent on a decree.—Every creature is good, partly by creation, and partly by *ordination. Perkins.*—Virtue and vice have a natural *ordination* to the happineſs and miſery of life reſpectively. *Norris.* 2. The act of inveſting any man with ſacerdotal power.—Though ordained by Arian biſhops, his *ordination* was never queſtioned. *Stillingfleet.*—St Paul looks upon Titus as entruſted with a large dioceſe, under the immediate government of their reſpective elders, and thoſe deriving authority from his *ordination. South.*

(2.) ORDINATION, (§ 1. *def.* 2.) is the act of conferring holy orders, or of initiating a perſon into the prieſthood, by prayer and the laying on of hands. It has always been eſteemed the principal prerogative of biſhops, and they ſtill retain the function as a mark of ſpiritual ſovereignty in their dioceſes. Without ordination, no perſon can receive any benefice, parſonage, vicarage, &c. A perſon muſt be 23 years of age, or near it, before he can be ordained deacon or have any ſhare in the miniſtry; and full 24 before he can be ordained prieſt, and by theſe means be permitted to adminiſter the holy communion. A biſhop, on the ordination of clergymen, is to examine them in the preſence of the miniſters, who, in the ordination of prieſts, but not of deacons, aſſiſt him at the impoſition of hands; but this is only done as a mark of aſſent, not becauſe it is thought neceſſary. In caſe any crime as drunkenneſs, perjury, forgery, &c. be alleged againſt any one that is to be ordained, either prieſt or deacon, the biſhop ought to deſiſt from ordaining him. The perſon to be ordained is to bring a teſtimonial of his life and doctrine to the biſhop, and to give an account of his faith in Latin; and both prieſts and deacons are obliged to ſubſcribe the 39 articles. The ordination of biſhops is more properly and more commonly called CONSECRATION. In the ancient diſcipline there was no ſuch thing as a vague and abſolute ordination; but every one was to have a church, whereof he was to be ordained clerk or prieſt. In the 12th century they grew more remiſs, and ordained without any title or benefice. The council of Trent reſtored the ancient diſcipline, and appointed that none ſhould be ordained but thoſe who were provided of a benefice ſufficient to ſubſiſt them; which practice ſtill obtains in England. The council of Rome, in 744, orders, that no ordinations ſhall be held except on the 1ſt, 4th, 7th, and 10th months. In England, by can. 31, ordination days are the four Sundays immediately following the Ember weeks: being the 2d Sunday in Lent, Trinity Sunday, and the Sundays following the firſt Wedneſday after Sept. 14th, and Dec. 13th. Theſe are the ſtated times; but ordinations may take place at any other time, according to the diſcretion of the biſhop or circumſtances of the caſe. Pope Alexander II. condemns *ordination per ſaltum*, as they call it; *i. e.* the leaping to a ſuperior order without paſſing through the inferior. Ordination is one of the ſacraments of the church of Rome. In the eſtabliſhment of Scotland, where there are no biſhops, the power of ordination is lodged in the preſbytery, and by the Independents in the ſuffrage of the people. See EPISCOPACY, INDEPENDENTS, and PRESBYTERIANS.

ORDINGE, ORDINGEN, or URDINGEN, a town

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town of Germany, in the circle of the Lower Rhine, and late archbiſhopric of Cologne; ſeated on the Rhine, 11 miles N. of Duſſeldorff, and 32 NNW. of Cologn. It was taken by the French under Marſh. Guebriant, in 1642.

ORDIQUHILL, [Gael. *i. e.* the hollow beſide the height,] a pariſh of Scotland, in Banffſhire; 4 miles long from N. to S. and 3 broad. The air is ſalubrious and the face of the country wildly beautiful. Two thirds of the pariſh are arable; the ſoil is deep, but cold. Lint, turnips, and potatoes are the chief crops. Through the exertions of Sir Erneſt-Gordon of Park, the proprietor, huſbandry is improving, and plantations are ſpreading. The population in 1792 was 517; decreaſe 149 ſince 1755. The learned Walter Goodall, author of the Defence of Mary, Q. of Scots, was born in this pariſh. See GOODALL.

(1.) * ORDNANCE. *n. ſ.* [This was anciently written more frequently *ordinance*; but *ordnance* is uſed for diſtinction.] Cannon; great guns.—

Have I not heard great *ordnance* in the field?
And heaven's artillery thunder? *Shak.*

—When a ſhip feels or rolls in foul weather, the breaking looſe of *ordnance* is a thing very dangerous. *Raleigh.*—There are examples of wounded perſons that have roared for anguiſh and torment at the diſcharge of *ordnance*, though at a very great diſtance. *Bentley.*

(1.) ORDNANCE is a general name for all ſorts of great guns uſed in war. See CANNON, CARABINE, CARRONADE-GUN, § 2, 3; HOWITZER, MORTAR, § 5—9; and PROJECTILES.

(3.) ORDNANCE BILLS, or ORDNANCE DEBENTURES, are bills iſſued by the board of ordnance on the treaſurer of that office, for the payment of ſtores, &c. Theſe are not payable at any certain time, and do not bear any intereſt, ſo that the diſcount upon them is often very high; but they are ſeldom much above two years in arrear.

(4.) ORDNANCE, BOARD OF. See § 7.

(5.) ORDNANCE, BORING OF. Till within theſe 30 years, iron ordinance were caſt with a cylindrical cavity, nearly of the dimenſion of the caliber of the piece, which was afterwards enlarged to the proper caliber by means of ſteel-cutters fixed into the dog-head of a boring-bar iron. Three ſide-cutters equidiſtant were requiſite to preſerve the caliber ſtraight and cylindrical; and, a ſingle cutter was uſed at the end of the bar to ſmooth the breech of the piece. In boring ordnance caſt hollow, the piece was fixed upon a carriage that could be moved backwards and forwards in a direct line with the centre of a water-wheel; in this centre was fixed the boring bar, of a ſufficient length to reach up to the breech of the piece, or more properly to the further end of the caliber. The carriage with the piece being drawn backwards from the centre of the water-wheel to introduce the boring and finiſhing bars and cutters, it is then preſſed forwards upon this bar by levers, weights, &c. and the water wheel being ſet agoing, the bar and fullers are turned round, and clean out and ſmooth the caliber to its proper dimenſions. Experience at laſt pointed out many inconveniences ariſing from the method of caſting guns *hollow*, and widening the calibers by theſe boring bars. For the body of iron of the hollow gun, being, at caſting, in contact with the core that made the caliber within ſide, and with the mould without ſide, began to conſolidate towards theſe ſides in the firſt place, ſooner than in the intermediate ſpace, where of courſe the contraction of the iron takes place; by which means, all guns caſt hollow became more or leſs ſpongy where they ought to have been moſt compact; and numberleſs cavities alſo were created round the cores, from ſtagnated air generated in them, which were too deep to be cut out by the boring. To remedy theſe defects, iron ordnance is now univerſally caſt ſolid, by which means the column of iron is greatly enlarged, and the grain more compreſſed; and the contraction of the iron becomes in the heart of the column, and conſequently is cut out by the perforation for the caliber. Guns are bored out of the ſolid reverſely from the hollow method. The principal difficulty of perforated ſolid guns truly centrical, ariſes from the contraction of the iron above-mentioned; which, reſiſting the drill unequally, tends to throw it out of the centrical line.

(6.) ORDNANCE DEBENTURES. See § 3.

(7.) ORDNANCE, OFFICE, OR BOARD OF, an office kept within the Tower of London, which ſuperintends and diſpoſes of all the arms, inſtruments, and utenſils of war, both by ſea and land, in all the magazines, garriſons, and forts in Great Britain. We have the following account of this eſtabliſhment in Beatſon's *Political Index*. In ancient times, before the invention of guns, this office was ſupplied by officers under the following titles: the *bowyer*, the *croſs bowyer*, the *galeator* or *purveyor of helmets*, the *armourer*, and the *keeper of the tents*; and in this ſtate it continued till Henry VIII. placed it under the management of a maſter, a lieutenant, ſurveyor, &c. &c. Some improvements have been ſince made; and this very important branch is now under the direction of the maſter-general of the ordnance, having under him a lieutenant-general, a ſurveyor-general, a clerk, a ſtorekeeper, a clerk of the deliveries, and a treaſurer, with a very great number of inferior officers, employed in the Tower of London, at Woolwich, and in almoſt all the forts, garriſons, and principal ports in his Majeſty's dominions. The office of ordnance is divided into two diſtinct branches, the civil and the military; the latter being ſubordinate to, and under the authority of the former.

I. ORDNANCE, CLERK OF THE, an officer whoſe function is to record all orders and inſtructions given for the government of the office; all patents and grants; the names of all officers, clerks, artificers, gunners, labourers, &c. who enjoy thoſe grants, or any other fee for the ſame; to draw all eſtimates for proviſions and ſupplies to be made, and all letters, inſtructions, commiſſions, deputations, and contracts for his majeſty's ſervice; to make all bills of impreſt and debentures, for the payment and ſatisfaction of work done and proviſions received in the ſaid office; and all quarter books for the ſalaries and allowances of all officers, clerks, &c. belonging to the office; and to keep journals and ledgers of the receipts and returns of his Majeſty's ſtores, to ſerve as a check between the two accountants of the office, the one for money, and the other for ſtores. He has 500l. a-year ſalary, and 100l. a-year more for being

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ing a check on the ſtorekeeper. In his office he has a number of clerks, under clerks, and ledger-keepers, who have all fixed ſalaries.

II. ORDNANCE, CLERK OF THE DELIVERIES OF THE, draws all orders for delivery of any ſtores, and ſees them duly executed; charges by indenture the particular receiver of the ſtores delivered; and in order to diſcharge the ſtorekeeper, regiſter the copies of all warrants for the deliveries, as well as the proportions delivered. He has a ſalary of 500l. *per annum*, and has ſeveral clerks in his office at fixed ſalaries, for the diſpatch of buſineſs.

III. ORDNANCE, COUNSEL TO THE BOARD OF, has a ſalary of 300l. a-year.

IV. ORDNANCE, LIEUTENANT-GENERAL OF THE, receives all orders and warrants ſigned by the maſter general, and from the other principal officers, and ſees them daily executed, iſſues orders as the occaſions of the ſtate require, and gives directions for diſcharging the artillery when required, at coronations, birth-days, ſignal victories, and other ſolemn occaſions. It is alſo his peculiar office to ſee the train of artillery and all its equipage fitted for motion, when ordered to be drawn into the field, or ſent upon any particular ſervice. As lieutenant-general of the ordnance, he has a ſalary of 1100l. *per annum*. He is a colonel *en ſecond* of the royal regiment of artillery, and has a ſecretary and ſeveral inferior officers and clerks under him.

V. ORDNANCE, MASTER-GENERAL OF THE, is deemed the principal officer in the civil branch of of the ordnance; yet he is always choſen from amongſt the firſt generals in his Majeſty's ſervice. His truſt is very great, as in him is veſted the ſole power of ſtoring all the military magazines in the king's dominions with proper munitions of war, and likewiſe to ſupply the royal navy with what they may need in his department; the parliament granting money in the moſt liberal manner for this purpoſe. He is colonel in chief of the royal regiment of artillery, and he is inveſted with a peculiar juriſdiction over all his Majeſty's engineers employed in the ſeveral fortifications in his Majeſty's dominions: to him they are all accountable for their proceedings, and from him they receive their particular orders and inſtructions, according to the directions and commands given by his Majeſty in council. He has a ſalary of 1500l. *per annum*, and the appointment of almoſt all the inferior officers and ſervants. He has a ſecretary, who has a ſalary of 220l. a-year, and an under ſecretary, who has a ſalary of 180l. a-year.

VI. ORDNANCE, MILITARY BRANCH OF THE, conſiſts of a chief engineer, who has under him two directors, four ſub-directors, with an unlimited number of engineers in ordinary, engineers extraordinary, ſub-engineers, and practitioner engineers.

VII. ORDNANCE, PROOF-MASTERS, PURVEYORS, AND OTHER OFFICERS OF THE. Beſides the principal officers above and after mentioned, there belongs to this office two proof-maſters, who have 20l. a-year each; a clerk of the works, who has 120l. a-year; a purveyor for the land, who has 100l. a-year, and a purveyor of the ſea, who has 40l. a-year; an architect, who has 120l. a-year; an aſtronomical obſerver, who has 100l. a-year, and other officers.

VIII. ORDNANCE, SECRETARY TO THE BOARD, OF, has a ſalary of 800l. a-year.

IX. ORDNANCE, STOREKEEPER OF THE, takes into his cuſtody all his Majeſty's ordnance, munitions and ſtores belonging thereto, and indents and puts them in legal ſecurity, after they have been ſurveyed by the ſurveyor-general, any part of which he muſt not deliver without a warrant ſigned by the proper officers; nor muſt he receive back any ſtores formerly iſſued till they have been reviewed by the ſurveyor, and regiſtered by the clerk of the ordnance in the book of remains; and he muſt take care that whatever is under his cuſtody be kept ſafe, and in ſuch readineſs as to be fit for ſervice upon the moſt peremptory demand. He has a ſalary of 400l. a-year; and in this office he has ſeveral clerks at fixed ſalaries.

X. ORDNANCE, SURVEYOR GENERAL OF THE, inſpects the ſtores and proviſions of war in the cuſtody of the ſtorekeeper, and ſees that they are ranged and placed in ſuch order as is moſt proper for their preſervation. He allows all bills of debt, and keeps a check upon all labourers and artificers work; ſees that the ſtores received be good and ſerviceable, duly proved and marked with the king's mark, taking to his aſſiſtance the reſt of the officers and proof-maſters. He has a ſalary of 700l. *per annum*; and, to aſſiſt him in the buſineſs of his office, he has under him the proof-maſter of England, clerks, and other inferior officers.

XI. ORDNANCE, TREASURER AND PAYMASTER OF THE, receives and pays all moneys, both ſalaries and debentures in and belonging to this office. He has a ſalary of 560l. *per annum*. In his office are ſeveral clerks, ordinary and extraordinary, for the diſpatch of buſineſs.

ORDONARII. See PARADOXI.

(1.) * ORDONNANCE. *n. ſ.* [French.] Diſpoſition of figures in a picture.

(2.) ORDONNANCE, in architecture, is the compoſition of a building, and the diſpoſition of its parts, both with regard to the whole and to one another; or, as Mr Evelyn expreſſes it, determining the meaſure of what is aſſigned to the ſeveral apartments. It is the judicious contrivance of the plan or mould: as when the court, hall, lodgings, &c. are neither too large nor too ſmall, but the court affords convenient light to the apartments about it; the hall is of fit capacity to receive company; and the bed-chamber, &c. of a proper ſize. When theſe diviſions are either too great or too ſmall, with reſpect to the whole, as where there is a large court to a little houſe, or a ſmall hall to a magnificent palace, the fault is in the ordonnance. See ARCHITECTURE.

(3.) ORDONNANCE, § 1. See PAINTING.

ORDORF, a town of Upper Saxony, in Thuringia, 10 miles S. of Gotha.

ORDOVICES, ancient Britons, of whom we have the following account in Henry's Hiſtory of Great Britain. They lived "in that country which is now called North Wales, and contains the counties of Montgomery, Merioneth, Caernarvon, Denbigh, and Flint. Theſe Ordovices, or (as they are called by Tacitus) ORDEUICES, are ſuppoſed to have been originally of the ſame tribe or nation with the Huicii of Warwickſhire, who were under ſome kind of ſubjection to the Cornavii; but

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but the Huicii of North Wales, being a free independent people, were called *Ordh Huici*, or the free Huicii. When they were invaded by the Romans, they ſhowed a ſpirit worthy of their name, and fought with great bravery in defence of their freedom and independency. Though they received a great defeat from the Roman general Oſtorius, in conjunction with the Silures, they maintained the war for a conſiderable time, until they were finally ſubdued with great ſlaughter, by the renowned Agricola. It was probably owing to the nature of the country, and to the vicinity of Diva, now Cheſter, where a whole legion was quartered, that the Romans had ſo few towns or ſtations in the territories of the Ordovices. Mediolanum, which is mentioned by Ptolemy, was the capital of the nation, and was probably ſituated at Maywood, in Montgomeryſhire. (See MEDIOLANUM, N° 4.) It was a place of ſome conſideration in the Roman times, but was afterwards demoliſhed by Edwin, king of Northumberland. Beſides this, the Romans had a few other towns in this country; as Segontium, now Caernarvon; Conovium, now Conway; and Varæ, now Bodvary, which are all mentioned in the eleventh journey of Antoninus. The country of the Ordovices was comprehended in the Roman province, called *Britannia Secunda*."

ORDUNA, or } a ſea-port town of Spain, in
ORDUNNA, } the prov. of Biſcay, in a valley, ſurrounded by high mountains, 20 miles SW. of Bilboa, and 50 NE. of Burgos. Lon. 3. 26. W. 43. 11. N.

* ORDURE. *n. ſ.* [*ordure*, French; from *ſordes*, Lat. *Skinner*.] Dung, filth.—

Gard'ners with *ordure* hide thoſe roots,
That ſhall firſt ſpring and be moſt delicate.
Shak.

—Working upon human *ordure*, and by long preparation, rendering it odoriferous, he terms it *ſibeſta occidentalis*. *Brown.*—

We added fat pollutions of our own,
T' increaſe the ſteeming *ordures* of the ſtage.
Dryden.

Renew'd by *ordure's* ſympathetic force,
Vig'rous he riſes. *Pope.*

(1.) * ORE. *h. ſ.* [*ore* or *era*, Saxon; *oor*, Dutch, a mine.] 1. Metal unrefined; metal yet in its foſſil ſtate.—

Round about him lay on every ſide,
Great heaps of gold that never would be ſpent;
Of which ſome were rude *ore* not purify'd.
Spenſer.

—They would have brought them the gold *ore* aboard their ſhips. *Raleigh.*—

In this womb was hid metallic *ore*,
The work of ſulphur. *Milton.*

Who have labour'd more
To ſearch the treaſures of the Roman ſtore,
Or dig in Grecian mines for purer *ore*?
Roſcommon.

—Quick-ſilver ore of this mine is the richeſt of all ores I have yet ſeen, for ordinarily it contains in it half quick-ſilver, and in two parts of *ore*, one part of quick-ſilver, and ſometimes in three parts of *ore*, two parts of quick-ſilver. *Brown.*—

We walk in dreams on fairy land,
Where golden *ore* lies mixt with common ſand.
Dryden.

'Till time digeſts the yet imperfect *ore*. *Dryd.*

Thoſe profounder regions they explore,
Where metals ripen in vaſt cakes of *ore*. *Garth.*

2. Metal.—

The liquid *ore* he drain'd,
Firſt his own tools. *Milton.*

(2.) ORE, in natural hiſtory, the compound mineral, glebe, earth, ſtone, or other ſubſtance, which is ſufficiently rich in metallic particles to be worth purification, and ſeparation of the metal from it, whether gold, ſilver, copper, &c. See CHEMISTRY, *Index*; METALLURGY, *Part* I. *Sect.* iv. *Part* II. and III. and MINERALOGY, *Part* I. *Chap.* II. *Part* II. *Chap.* VII; and *Part* III. *Chap.* IV. alſo the various metals, in their order.

(3.) ORE, in geography, a river of France, in the department of Puye de Dome.

OREADES, in ancient mythology, nymphs of the mountains, daughters of Jupiter, or, as others ſay, of Phoroneus and Hecate. They attended Diana in hunting. See NYMPH, § 3.

OREAS. See CAPRA, § VII. N° 12.

OREBRO, or ORREBRO, a town of Sweden, capital of Nercia, at the W. end of Lake Hielmar. The caſtle, formerly a royal reſidence, and fortified by Guſtavus I. is ſeated on a ſmall iſland in the middle of the town, formed by two branches of the Swart. It has two churches, a grammar ſchool, and manufactories of fire-arms, cloth, and tapeſtry; with a harbour on lake Hielmar, which communicates with the Maler, by the canal of Arboga. The natives carry on a great trade with Stockholm, in iron, vitriol, red paint, &c. and are famed for exact weights and meaſures. It lies 95 miles SW. of Stockholm. Lon. 15. 12. E. Lat. 59. 12. N.

(1.) OREBY HUS, a town of Sweden, in Weſtmanland, 20 miles N. of Upſal.

(2.) OREBY POINT, a cape on the N. coaſt of the iſle of Lewis. Lon. 2. 51. W. of Edin. Lat. 58. 33. N.

ORECHOVITZ, a town of European Turkey, in Bulgaria, 28 miles WSW. of Nicopoli.

OREDSCH, a river of Ruſſia, which runs into the Lugo, 20 miles N. of Lugo.

OREEHOUA, one of the SANDWICH iſles. It has about 4000 inhabitants.

OREGRUND, a ſea port in Sweden, in Upland, on the gulf of Bothnia, built in 1491; oppoſite the iſle of Ginſon, 60 miles N. of Stockholm. It was three times burnt by the Ruſſians. Lon. 18. 15. E. Lat. 60. 20. N.

OREILLONS. See MEDICINE, *Index*.

(1.) OREL, a mountain of France, in the department of Drome, near DIE.

(2.) OREL, a province or government of Ruſſia, in Bielgorod.

(3.) OREL, the capital of the above province, ſeated on the Oka, 207 miles SW. by S. of Moſcow. Lon. 35. 20. E. Lat. 52. 56. N.

(1.) ORELLANA, Francis, the firſt European, as is commonly thought, who diſcovered the river of the Amazons. In 1539, he embarked near Quito, upon the river Coca, which farther down takes the name of Napo. From this he fell into another

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another larger river; and leaving himself entirely to the direction of the current, he arrived at Cape North, on the coast of Guiana, after sailing nearly 1800 leagues. Orellana perished ten years after, with 3 vessels which had been intrusted to him in Spain, without being able to find again the mouth of this river. In sailing down the river, he met with some armed women, against whom an Indian cacique had told him to be on his guard; and he thence named it *the river of the Amazons*.

(2.) ORELLANA. See AMAZON.

(1.) ORENBURG, a province of Russia, in the government of Upha.

(2.) ORENBURG, the capital of the above province, with a castle, built in 1738, on the Ural, or Yaik, by the empress Anne. It has a good trade; and is 180 miles S. of Upha, 750 E. by S. of Moscow, and 972 SE. of Petersburg. Lon. 55. 0. E. Lat. 51. 46. N.

ORENSE, an ancient town of Spain, formerly called AQUICALDENSIS, in the kingdom of Galicia, with a bishop's see. It is famous for its hot baths; and is seated at the foot of a mountain, on the river Minho, over which there is a handsome bridge of one arch. Lon. 7. 27. W. Lat. 42. 16. N.

OREOTRAGUS. See CAPRA, § VII. N° 13.

ORES, a town of Sardinia, 10 miles SSE. of Oristagni.

ORESA, a town of Lithuania in Novogrodock.

ORESMAUX, a town of France, in the department of the Somme, 8 miles S. of Amiens.

ORESTÆ, a people of Epirus. *Lucan.*

ORESTES, in fabulous history, the son of AGAMEMNON and CLYTEMNESTRA. When his father was cruelly murdered by Clytemnestra and ÆGISTHUS, young Orestes was saved from his mother's dagger by his sister Electra, called by Homer *Laodicea*, who privately conveyed him to the house of Strophius, king of Phocis, who had married a sister of Agamemnon. He was tenderly treated by Strophius, who educated him with his son PYLADES. The two young princes soon contracted a most inviolable friendship. When Orestes came of age, he visited Mycenæ, and avenged his father's death, by killing his mother Clytemnestra and her adulterer Ægisthus. After this he was acknowledged king of Mycenæ; but being tormented by the Furies for his parricide, he exiled himself to Argos, where Apollo purified him, and he was acquitted by the unanimous decision of the Areopagites, whom Minerva herself instituted on this occasion, according to the poet Æschylus. Pausanias says, Orestes was purified of the murder at Trœzene, where still was seen a large stone at the entrance of Diana's temple, upon which the ceremonies of purification had been performed. There was also at Megalapolis, in Arcadia, a temple dedicated to the Furies, near which Orestes bit off one of his fingers with his teeth, in his insanity. But Euripides says, that Orestes, after the murder of his mother, consulted the oracle of Apollo at Delphi, where he was told, that nothing could deliver him from the Furies, if he did not bring into Greece Diana's statue, from the Taurica Chersonesus, which, as was believed, had fallen down from heaven. Thoas, king of Chersonesus, always sacrificed to the goddess all who entered his country. Orestes and his friend were therefore both doomed to be sacrificed. Iphigenia, Orestes's sister, was then priestess of Diana's temple, and it was her office to immolate these strangers. The intelligence that they were Grecians delayed the preparations, and Iphigenia was anxious to learn something about her native country. She interested herself in their misfortunes, and offered to spare the life of one of them, provided he would convey letters to Greece. This was a difficult trial; never was friendship more truly displayed, according to Ovid, *de Ponto* 3. *el.* 2.

Ire jubet Pylades earum moriturus Oresten;
Hic negat; inque vicem pugnat uterque mori.

At last, Pylades yielded to the intreaties of his friend, and consented to carry the letters to Greece. These were addressed to Orestes himself, and led to a discovery of the connection of the priestess with the man whom she was going to immolate. Iphigenia, when the cause of their journey had been explained, resolved to fly from Chersonesus with them, and to carry away the statue of Diana. Their flight was discovered, and Thoas prepared to pursue them; but Minerva interfered, and told him that all had been done by the will of the gods. Orestes came to Cappadocia from Chersonesus, and left there the statue of Diana at Comana. After this Orestes reigned at Argos; married Hermione the daughter of Menelaus, and gave his sister to his friend Pylades. Hermione had been promised to Orestes, but Menelaus had married her to Neoptolemus the son of Achilles, who had exerted himself so much in his cause, during the Trojan war. Orestes, to recover her, assassinated Neoptolemus. According to Ovid's epistle of Hermione to Orestes, she had always been faithful to her first lover, and her attachment was increased. With her he retired to his kingdom of Argos. His old age was crowned with peace, and he died in his 90th year, leaving his throne to his son Tisamenes by Hermione; who was 3 years after expelled by the Heraclidæ. See HERACLIDÆ. Orestes died in Arcadia, by the bite of a serpent; and the Lacedemonians, who had become his subjects at the death of Menelaus, were directed by an oracle to bring his bones to Sparta. They were some time after discovered at Tegea, and his stature appeared to be seven cubits, according to the traditions mentioned by Herodotus and others. The friendship of Orestes and Pylades became proverbial; and the two friends received divine honours among the Scythians.

ORESTEUM, an ancient town of Arcadia, so named from Orestes, 18 miles from Sparta.

ORESTIDA, a country of Greece, SW. of Macedonia, so named by the subjects and descendants of ORESTES, who settled in it, after they were expelled from Argos by the Heraclidæ.

* OREWEED. } *n. s.* A weed either grow-
* OREWOOD. } ing upon the rocks under high water mark, or broken from the bottom of the sea by rough weather, and cast upon the next shore by the wind and flood. *Carew.*

ORFA, a considerable town of Asia, in Diarbeck,

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beck, pleasantly situated, and well fortified. It formerly belonged to Persia; but is now in the Turkish dominions, and is a place of very good trade. It has a stately castle standing on a hill, which makes a great show at a distance. They pretend to show the well where Rachel watered her father's camels when Jacob met her, and they call it *Abraham's well*. It is seated on the Euphrates, 83 miles NE. of Aleppo, and 100 SW. of Diarbekir. Lon. 37. 45. E. Lat. 36. 20. N.

ORFER, a town of Scotland, in Orkney, on the S. coast of the island of Pomona, 7 miles SW. of Kirkwall. *Cruttwell.*

* ORFGILD. *n. s.* The restitution of goods or money taken away by a thief by violence, if the robbery was committed in the day-time. *Ainsw.*

ORFO, a town of Africa, in Labadde.

(1.) ORFORD, a town of Suffolk, 88 miles from London, situated between two channels, where the river Ore, after having joined the Ald, falls into the sea. It was once a large populous town, with a castle and nunnery, of which there are still some ruins. The towers of the castle and its church are a sea mark. The town was incorporated by Henry III. has a mayor, 18 portmen, 12 chief burgesses, a recorder, a town clerk, &c. It sent members to parliament in the 26th of Edward I. and still sends two. By the withdrawing of the sea, its harbour, formerly its chief advantage, is rendered almost useless. It is 18 miles E. by N. of Ipswich, and 88 NE. of London. Lon. 1. 33. E. Lat. 52. 15. N.

(2.) ORFORD, a township of New Hampshire, in Grafton county, on the E. bank of the Connecticut, 11 miles N. of Hanover.

(3.) ORFORD NESS, a cape of England, on the SE. coast of Sussex, with a light-house. Lon. 1. 6. E. Lat. 52. 4. N.

ORGABRA, a town of Africa, in Magadoxa.

ORGAGNA, Andrew, an excellent Italian painter, born at Florence in 1329. In his youth he learned sculpture; he was also a poet and an architect. He had a fruitful genius, and his manner resembled that of the other painters of his time. Most of his works are at Pisa. The most admired of them is his picture of the Last Judgment, in which he painted his friends among the blessed, and his foes in hell. He died in 1389.

* ORGAL. *n. s.* Lees of wine.

(1.) * ORGAN. *n. s.* [*organe*, Fr. ὄργανον, Gr.] 1. Natural instrument; as the tongue is the organ of speech, the lungs of respiration.—

When he shall hear she died upon his words,
The ever lovely *organ* of her life
Shall come apparell'd in more precious habit,
Than when she liv'd indeed. *Shak.*

—For a mean and *organ*, by which this operative virtue might be continued, God appointed the light to be united. *Raleigh.*—The aptness of birds is not so much in the conformity of the *organs* of speech, as in their attention. *Bacon.*

Wit and will
Can judge and chuse, without the body's aid;
Tho' on such objects they are working still,
As thro' the body's *organs* are convey'd. *Davies.*

2. An instrument of music, consisting of pipes filled with wind, and of stops, touched by the hand. [*Orgue*, Fr.]—A prodigious number of fingers playing upon all the *organ* pipes in the world, and making every one sound a particular note. *Kiel.*—

While in more lengthen'd notes and slow,
The deep majestick, solemn *organs* blow. *Pope.*

(2.) ORGAN, in general, is an instrument or machine, designed for the production of some certain action or operation; in which sense the mechanic powers, machines, and even the veins, arteries, nerves, muscles, and bones of the human body, may be called *organs*.

(3.) ORGAN, in music, denotes the largest and most harmonious of all wind instruments; on which account it is called ὄργανον, the *organ*, *the instrument*, by way of excellence; chiefly used for playing a thorough bass, with all its accompaniments.

(4.) ORGANS, ANCIENT, ACCOUNTS OF. That organs are the invention of remote antiquity is generally allowed; but the particular time and country in which the discovery was made are uncertain. In ancient authors there are various passages where mention is made of the organ, but it was probably an instrument very different from that which now goes by this name. It appears indeed to have been borrowed by the Latins from the Greeks, but not to have been in general use till the 8th century. Vitruvius describes an organ in his 10th book, and St Jerome mentions one with 12 pair of bellows, which might be heard 1000 paces, or a mile off; and another at Jerusalem, which might be heard at the Mount of Olives. It has been affirmed, that, in France, it was not known till the time of Lewis I. A. D. 815, when an Italian priest taught the use and construction of it, which he had learned at Constantinople. By some, however, it has been carried as far back as Charlemagne, and by others as far as Pepin.

(5.) ORGANS, INTRODUCTION OF, INTO CHURCHES. Bellarmine says that the organ began to be used in the service of the church about 660. Ammonius thinks, however, that this happened after 820, in the time of Lewis the Pious. The learned Bingham, in his *Origines Sacræ* affirms, that organs were not used till after the time of Thomas Aquinas, and he adds these words. "Our church does not use musical instruments, as harps and psalteries, to praise God withal, that she may not seem to Judaize." Hence it has been concluded, by the learned Gregory, that they were not used in churches in his time, about A. D. 1250. It appears, however, from the testimony of Gervas the monk of Canterbury, who flourished A. D. 1200, that organs were introduced upwards of 100 years even before that time. If Gervas's authority be held good, it will give countenance to a pretty general opinion, that in Italy, Germany, and England, they became frequent about the 10th century. See MUSIC, § 43. But it is certain, that the use of the organ was very common in the latter ages of the church, and the propriety of it was undisputed. In the 17th century, however, during the civil wars, organs were removed from the churches in England; and so generally reprobated, that, at the Restoration, there could scarce be found either organists, organ builders, or singers. Organs have never yet been used in the establishment of Scotland since it became Presbyterian; but they

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Fig. 1.

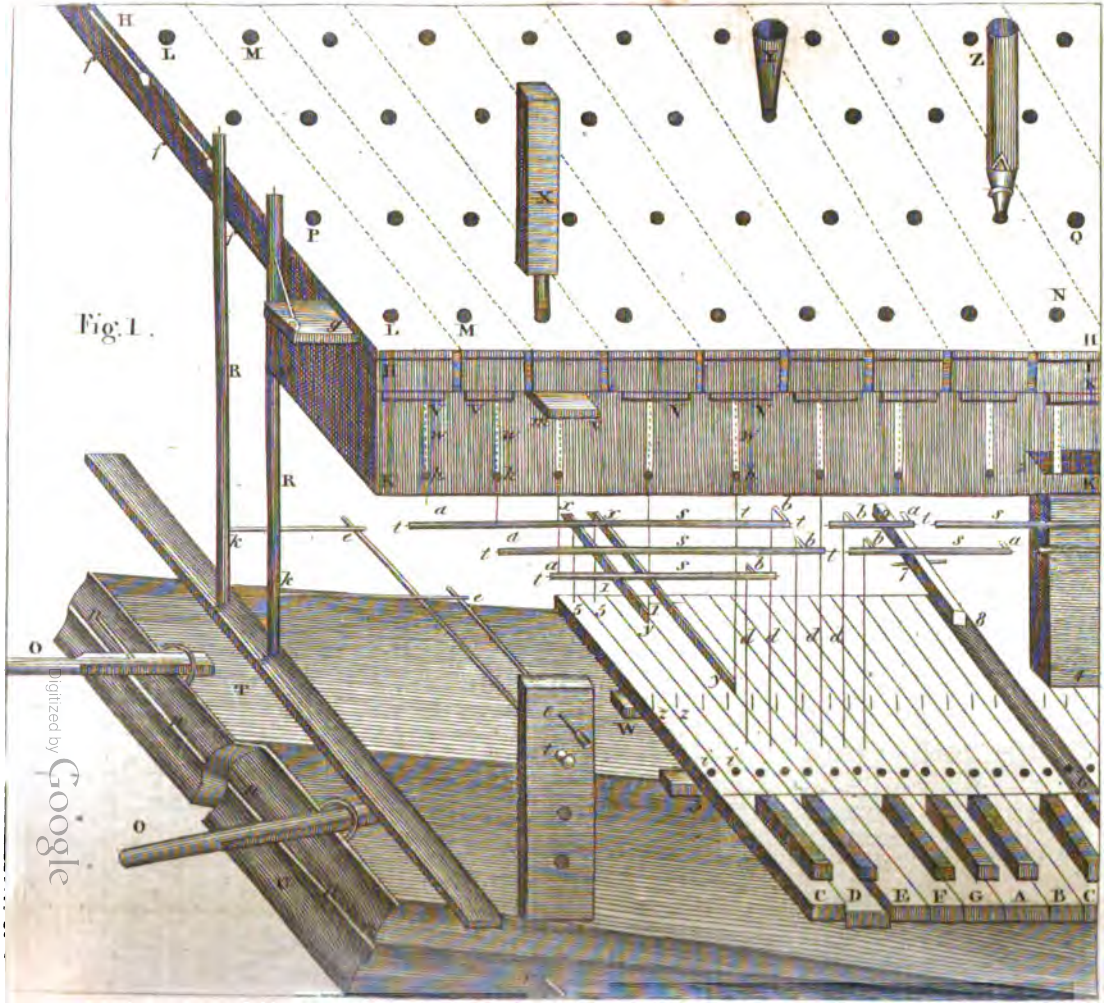


Fig. 2.

Fig. 5.
Indian Ram.

Fig. 3.

Fig. 6.
Indian Ewe.

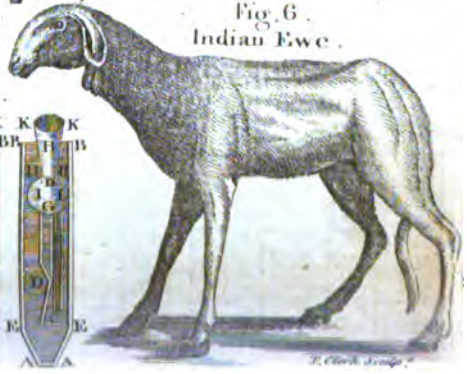
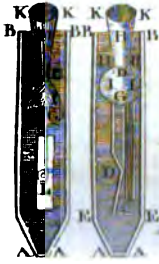


Fig. 4.



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are uſed in Holland, where that form of church government alſo obtains.

(6.) ORGANS, REMARKABLY LARGE. The organs in Germany (ſays Dr Burney) in magnitude, and the organiſts in abilities, ſeem unrivalled in any other part of Europe, particularly in the uſe of pedals. In *Marpurg's Eſſays*, vol. iii. there is a minute account of a variety of organs in Germany; of all which the longeſt pipe of the manuals is 16 feet long, and of the petals 32. One of the largeſt organs in Germany is at Gorlitz in Upper Luſatia. The uncommon merit of Handel as an organiſt is well known. The organ in the cathedral church at Ulm in Germany is 93 feet high and 28 broad; its largeſt pipe is 13 inches diameter, and it has 16 pair of bellows.

(7.) ORGAN, THE CHURCH, conſiſts of two parts; the main body, called the *great organ*; and the poſitive or *little organ*, which forms a ſmall caſe or buffet, commonly placed before the great organ. The ſize of an organ is generally expreſſed by the length of its largeſt pipe: thus they ſay, an organ of 8, 16, 32 feet, &c. The ſeveral parts of the church organ are as follow. HIH, *Plate* CCLXII. *fig.* 1. is the ſound-board: which is compoſed of two parts, the upper board or cover HHH, and the under board HI, which is much thicker than the other; each of theſe conſiſts of ſeveral planks laid with their edges to each other, and joined very cloſe together. In the under ſide of the lower board there are made ſeveral channels, which run in the direction LL, MM, &c. and are continued as far as there are ſtops in the organ, and come almoſt to the edge HK. Theſe channels are covered over very cloſe with parchment or leather all the way, except a hole that is commonly at the fore end next HK, upon which a valve or puff is placed. Theſe channels are called *partitions*. When this valve or flap is ſhut, it keeps out the air, and admits it when open. On the upper ſide of the lower board there are likewiſe cut ſeveral broad ſquare channels, lying croſs the former, but not ſo deep as to reach them; theſe lie in the direction LN, PQ, &c. To fit theſe channels, there are the ſame number of wooden ſliders or regiſters *f*, *f*, *f*, &c. running the whole length; and theſe may be drawn out or thruſt in at pleaſure. The number of theſe is the ſame as that of the ſtops in the organ. IKKK is the wind cheſt, which is a ſquare box fitted cloſe to the under ſide of the lower board, and made air-tight, ſo that no air can get out but what goes through the valves along the partitions. VV are the valves or puffs which open into the wind-cheſt; they are all incloſed in it, and may be placed in any part of it, as occaſion ſhall require. One of theſe valves, with the ſpring that ſhuts it, and the wire that opens it, is repreſented by *fig.* 2. C, D, E, F, &c. are keys on which the fingers are placed when the organ is played: theſe keys lie over the horizontal bar of wood W, in which are ſtuck an uſual number of wire-pins *z*, *z*, on which keys be fixed; and the keys move up and down on the ear, as on a centre. There is another bar, againſt which the keys fall when put down, and which is here marked 3: on this alſo are ſeveral wires, which go through the keys to guide them; and on this bar a liſt is faſtened to hinder the keys from knocking againſt the wood. The keys are made to communicate with the valves ſeveral ways, as we ſhall now deſcribe. Firſt *s*, *s*, *s*, are the key-rollers, moving on the pivots *t*, *t*: theſe rollers lie horizontally, one above another, and are of ſuch a length as to reach from the valve to the key; *a*, *a*, *a*, are arms or levers fixed to the key-rollers: *w*, *w*, the valve wires fixed to the arms *a*, *a*, and to the valves V, and go through the holes *b*, *h*, in the bottom of the wind-cheſt: *b*, *b*, *b*, are likewiſe arms fixed to the key-rollers: *d*, *d*, *d*, the key-wires, fixed to the arms *b*, *b*, and to the keys C, D, E. When the end of any one of the keys C, D, E, is put down, it pulls down the arm *b*, by the wire *d*, which turns about the roller *s* with the arm *a*, that pulls down the wire *w*, which opens the valve that is ſhut by the ſpring as ſoon as the preſſure is taken off the key. In this conſtruction there muſt be a worm ſpring faſtened to the key, and to the bar W on the further ſide, to keep down the end *s* of the key. Another method of opening the valves is thus: *x y*, *x y*, are ſlender levers, moveable on the centres 1, 1; *s x*, *s x*, are wires going from the further ends of the keys to the ends *x* of the levers; *y* V, *y* V, are other wires, reaching from the ends *y* of the levers, through the holes *h*, to the valves V. So that putting down the key, C, D, &c. raiſes the end *s*, which thruſts up the end *x* of the lever, by the wire *s x*: this depreſſes the end *y* of the lever, which pulls down the wire *y* V, and opens the valve V. A 3d way of opening the valves is this: At the end of the key *b*, is a lever 8, 9, moving in the centre 7. This makes, with the key, a compound lever. From the end 9, a wire goes to the valve. Now the putting down the end 6 of the key, raiſes the end 8, which depreſſes the end 9 of the lever, 8, 9, pulls down the wire, and opens the valve. There is only one of theſe in the plate, and but a few of the others, to avoid confuſion. R, R, are the rollers, to move the ſliders, by help of the arms *c f*, *c f*, which are fixed horizontally in theſe rollers: *k e*, *k e*, are alſo levers fixed in the rollers; *l e*, *l e*, are the handles, which lie horizontally, and paſs through the holes *l l*; they are faſtened to the lever *k e*, being moveable about a joint at *e*. Any handle *l p*, being drawn out, pulls the end *e* towards *l*, which turns about R *k*, along with the arm *c f*; and the end *f* pulls out the ſlider *f g*; and when *p* is thruſt in, the arm *c f* likewiſe thruſts in the ſlider *f g*. Upon the ſeveral rows of holes which appear on the top of the upper board, there are ſet up an equal number of rows of pipes. The pipes of an organ are of two kinds; the one has a mouth like a flute, the other with reeds. The firſt, called *pipes of mutation*, conſiſt, (1.) of a foot AABB (*fig.* 3.), which is a hollow cone, which receives the wind that is to ſound the pipe; (2.) To this foot is faſtened the body of the pipe BBDD. Between the foot and the body of the pipe is a diaphragm or partition FEF, that has a long but narrow aperture by which the wind comes out; over this aperture is the mouth BBC, whoſe upper lip C, being level, cuts the wind as it comes out. The pipes are of pewter, of lead mixed with a twelfth part of tin, and of wood. Thoſe of pewter are always open at their extremities: their di-

ameter is very ſmall, and their ſound very clear and ſhrill. Thoſe of lead mixed with tin are larger; the ſhorteſt are open, the longeſt quite ſtopped; thoſe of a mean ſize are partly ſtopped, and have beſides a little ear on each ſide the mouth, to be drawn cloſer or ſet further aſunder, in order to raiſe or lower the ſound. The wooden pipes are ſquare, and their extremity is ſtopped with a valve or tampion of leather. The ſound of the wooden and leaden pipes is very ſoft; the large ones ſtopped are commonly of wood, the ſmall ones of lead. The longeſt pipes give the graveſt ſound, and the ſhorteſt the moſt acute: their lengths and widths are determined by a fixed proportion to their ſounds; and their diviſions are regulated by a rule, which is called the *diapaſon*. The longeſt has commonly 16 feet; but in very large organs it has 32 feet. The pedal tubes are always open, though made of wood and of lead. Whatever note any open pipe ſounds, when its mouth is ſtopped it will ſound an octave lower; and a pipe of twice its capacity will likewiſe ſound an octave lower. A reed-pipe conſiſts of a foot AABB (*fig.* 4.), that carries the wind into the ſhallot or reed CD, which is a hollow demi-cylinder, fitted at its extremity D, into a ſort of mould, by a wooden tampion G. The ſhallot is covered with a plate of copper KKLL, fitted at its extremity II, into the mould, by the ſame wooden tampion. Its other extremity KK is at liberty: ſo that the air entering the ſhallot makes it tremble or ſhake againſt the reed; and the longer that part of the tongue IL, which is at liberty, is made, the deeper is the ſound. The mould HI, that ſerves to fix the ſhallot or reed, the tongue, tampion, &c. ſerves alſo to ſtop the foot of the pipe, and make the wind go out wholly at the reed. Laſtly, in the mould is ſoldered the tube HH, whoſe inward opening is a continuation of that of the reed: the form of this tube is different in different ranks of pipes. The degree of acuteneſs or gravity in the ſound of a reed pipe, depends on the length of the tongue, and that of the pipe CK, taken from the extremity of the ſhallot to the extremity of the tube. The quantity or intention of the ſound depends on the width of the reed, the tongue, and the tube; as alſo on the thickneſs of the tongue; the figure of the tube, and the quantity of wind. To diverſify the ſounds of the pipes, a valve is added to the port-vent, which makes the wind go out in fits or ſhakes. In *fig.* 1. X repreſents a flute-pipe of wood, Z a flute pipe of metal, Y a trumpet-pipe of metal. The pipes, to prevent them from falling, paſs through holes made in boards, placed upon the upper board. The pipes are made to communicate with the wind-cheſt in the following manner: There are holes bored that go through the upper and lower boards, and through the ſlider, (when it is drawn out), into the partition below; ſo that any pipes placed upon thoſe holes will then communicate with the partition, which by its valve communicates with the wind-cheſt. But when the ſlider is thruſt in, its holes do not anſwer to thoſe in the upper and lower boards; therefore, the communication is ſtopped, ſo that no wind can get to the pipe. To every large organ there muſt be at leaſt two pair of bellows, which are marked in *fig.* 1. by TU, TU. O, O, are the handles, moving upon the axis *n n*, *n n*. Each of theſe bellows conſiſt of two boards, the loweſt of which is immoveable; and in this there is a valve *r*, opening inwards, and a tube leading to it, called the *conveying tube*. There is alſo a hole in this under board, from which a tube leads to the port-vent, which is a ſquare tube marked 4, riſing upward, and inſerted into the under ſide of the wind-cheſt at 2. In the tube leading to the port-vent, there is a valve that opens towards the port vent, and ſuffers the air to go up the port-vent, but not to return. Now the handle O being pulled down, raiſes the upper board T, and the air enters through the valve *r*; and when the handle is let go, the weight of the upper board, which carries 3 or 4 lb. to every ſquare foot, continually deſcending, drives the air through the port-vent to the ſound-board: and as the bellows work alternately, one pair is conſtantly deſcending, which occaſions a continual blaſt through the port-vent. In chamber-organs there is but one pair of bellows; but they are formed of three boards, in the manner of a ſmith's bellows, and ſo have a continual blaſt. All the internal ſtructure of the organ is concealed from the ſight by the front of the inſtrument, which ſtands upon the part between the numbers 3 and 6 (*fig.* 1.) In every organ the number of partitions LL, MM, &c. there are in the ſound-board (*fig.* 1.) that of the valves VV, that of the rollers *s s*, or of the levers *x y* or 8 9 and their wires, and that of the keys ABC, &c. muſt be always equal. Large organs have commonly 4 or 5 ſets of keys, beſides thoſe that belong to the pedals or large pipes, the ſtops of which are played by the feet; ſaid to be the invention of Bernhard, a German, about A. D. 1400. Theſe command certain pipes, which, to increaſe the harmony, are turned below the diapaſon. The keys of an organ are uſually divided into four octaves; which are, the firſt ſub-octave, ſecond ſub-octave, middle octave, and firſt octave. Each octave is divided into 12 ſtops or frets, of which 7 are black and 5 white; the former mark the natural notes, and the latter the artificial notes, that is, flats and ſharps. The number of keys, therefore, when there are 4 octaves, muſt be 48. Some organiſts add one or more ſtops to the firſt and ſecond ſub-octaves. The pedals have 2 or 3 octaves, at the option of the organiſt; ſo that the number of ſtops is indeterminate. The keys are placed between GG, (*fig.* 1.), but the figure could not contain them all. There are alſo as many handles *l*, *l*, &c. rollers RR, &c. ſliders *f*, *f*, &c. as there are ſtops upon the organ; and it muſt be obſerved, that between the ſliders *f*, *f*, &c. there are as many ſliders on the right hand, and the ſame number of handles and rollers, and other rows of pipes placed between LN, PQ, which could not be expreſſed in the figure. The leaſt pipes and partitions are placed toward the middle of the organ, and the greateſt on the outſide. The ſtops of an organ have various denominations, according to the ſounds they are to produce; ſome of which are diapaſon, principal, fifteenth, twelfth, tearce, cornet, trumpet, French horn, vox humana, flute, baſſoon, cremona, &c. The foreign organs

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gans, especially those of Germany, have many more: particularly that in the abbey church of Weingarten, a town in the upper Palatinate, which has 66 stops, and contains no fewer than 6666 pipes. The organ at Haerlem is said to have 60 stops, many of them but little known to the English workmen, and distinguished by names that express the sound which they produce. When this magnificent instrument is played, the handle O of the bellows is first put down, which raises the upper board T, and gives room for the air to enter by the valve *r*. Then the other handle O is put down: in the mean time the board T, belonging to the first handle, descending, and shutting the valve *r*, drives the air through the other valve, up the port-vent, and into the wind-chest. Then drawing out any handle, as that of the flute-stop *p l*, which draws out the slider *f g*, all the pipes in the set LN are ready to play, as soon as the keys C, D, E, &c. are put down: therefore, if the key D be put down, it opens the corresponding valve *m* V, through which the air enters into the pipe X, and makes it sound. In the same manner any other pipe in the set LN will sound when its key is put down; but no pipe, in any other set, will sound till the slider be drawn out by its corresponding handle. Among the modern improvements of the organ, the most remarkable are the swell and the tremblant: the former, invented by an English artist, consists in a number of pipes placed in a remote part of the instrument, and inclosed in a kind of box, which, being gradually opened by the pressure of the foot, increases the sound as the wind does the sound of a peal of bells, or suppresses it in like manner by the contrary action. The tremblant is a contrivance by means of a valve in the port-vent or passage from the wind-chest, to check the wind, and admit it only by starts; so that the notes seem to stammer, and the whole instrument to sob, in a manner very offensive to the ear. There is a tremblant in the organ at the German chapel in the Savoy. See Hawkin's *History of Music*, and Burney.

(8.) ORGAN, THE HYDRAULIC, denotes a musical machine that plays by water instead of wind. Of these there are several in Italy, in the grottos of vineyards. Ctesebes of Alexandria, who lived in the time of Ptolemy Euergetes, is said to have invented organs that played by compressing the air with water, as is still practised. Alchimedes and Vitruvius have left us descriptions of the hydraulic organ. In the cabinet of Queen Christina is a beautiful and large medallion of Valentinian, on the reverse whereof is seen one of these hydraulic organs; with two men, one on the right, the other on the left, seeming to pump the water which plays it, and to listen to its sound. It has only 8 pipes, placed on a round pedestal. The inscription is PLACEAS PETRI.

ORGANA. See ORGAGNA.

ORGANDA, a town of Ceylon, 5 miles from Appoola-Pitty, where a party of the Candians, (the remains of the grand army, that was completely routed by the British at Hangwelle, on the 6th Sept. 1803,) were, after a most obstinate resistance, and great slaughter, defeated and put to flight, by a detachment of British troops under Captain Pollock, on the 12th of Sept. 1803.

ORGANFORD, a village of Dorsetshire, near Poole, remarkable for the great quantity of *organy* or penny-royal produced in its neighbourhood.

ORGANGA, a town of Spain, in Catalonia, 18 miles N. of Solsona.

* ORGANICAL. ORGANICK, *adj.* [*organique*, Fr. *organicus*, Lat.] 1. Consisting of various parts co-operating with each other.—

He rends the air, and breaks the hymnick notes
In birds, heav'ns chorusters, *organick* throats.
Donne.

He with serpent tongue
Organick, or impulse of vocal air,
His fraudulent temptation thus began. *Milton.*

—The *organical* structure of human bodies, whereby they live and move, and are vitally informed by the soul, is the workmanship of a most wise, powerful, and beneficent being. *Bentley.* 2. Instrumental; acting as instruments of nature or art, to a certain end.—Read with them those *organick* arts which enable men to discourse and write perspicuously. *Milton.* 3. Respecting organs.—She could not produce a monster of any thing that hath more vital and *organical* parts than a rock of marble. *Ray.*—They, who want the sense of hearing, are by consequence deprived of speech, not by any immediate *organical* indisposition, but for want of discipline. *Holder.*

* ORGANICALLY. *adv.* [from *organical*.] By means of organs or instruments; by organical disposition of parts.—All stones, metals, and minerals, are real vegetables; that is, grow *organically* from seeds, as well as plants. *Locke.*

* ORGANICALNESS. *n. s.* [from *organical*.] State of being organical.

* ORGANISM. *n. s.* [from *organ*.] Organical structure.—How admirable is the natural structure or *organism* of bodies. *Grew.*

* ORGANIST. *n. s.* [*organiste*, French; from *organ*.] One who plays on the organ.—An *organist* serves that office in a publick choir. *Boyle.*

* ORGANIZATION. *n. s.* [from *organize*.] Construction in which the parts are so disposed as to be subservient to each other.—Every man's senses differ as much from others in their figure, colour, site, and infinite other peculiarities in the *organization*, as any one man's can from itself. *Glanville.*—That being then one plant, which has such an *organization* of parts in one coherent body, partaking of one common life, it continues to be the same plant, though that life be communicated to new particles of matter, in a like continued *organization*. *Locke.*

* *To* ORGANIZE. *v. a.* [*organiser*, Fr. from *organ*.] To construct so as that one part co-operates with another: to form organically.—The soul doth *organize* the body. *Hooker.*—A genial and cherishing heat so acts upon the fit and obsequious matter wherein it was harboured, as to *organize* and fashion that disposed matter according to the exigencies of its own nature. *Boyle.*—Those nobler faculties in the mind, matter *organized* could never produce. *Ray.*—The identity of the same man consists in a participation of the same continued life, by constantly fleeting particles in

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in ſucceſſion vitally united to the ſame *organized* body. *Locke.*

ORGAN-LING. See ORGEIS.

* ORGANLOFT. *n. ſ.* [*organ* and *loft.*] The loft where the organs ſtand.—Five young ladies, of no ſmall fame for their great ſeverity of manners, would go nowhere with their lovers but to an *organ-loft* in a church. *Tatler.*

* ORGANPIPE. *n. ſ.* [*organ* and *pipe.*] The pipe of a muſical organ.—

The thunder,
That deep and dreadful *organpipe* pronounced
The name of Proſper. *Shak.*

(1.) * ORGANY. *n. ſ.* [*origanum*, Latin.] An herb. *Ainſworth.*

(2.) ORGANY See ORIGANUM.

(1.) * ORGASM. *n. ſ.* [*orgaſme*, Fr. ὀργασμὸς.] Sudden vehemence.—This rupture of the lungs, and conſequent ſpitting of blood, uſually ariſes from an *orgaſm*, or immoderate motion of the blood. *Blackmore.*—By means of the curious lodgment and inoculation of the auditory nerves, the *orgaſms* of the ſpirits ſhould be allayed. *Derh.*

(2.) ORGASM, in medicine, denotes violence or turgeſcency [from ὀργαω, *to ſwell*], and is uſed for ecſtacy or impetuous deſire of coition, occaſioned by a turgency of the ſeminal veſſels, which are no longer able to reſtrain their contents. The ancients alſo extend orgaſm to the other humours, and even excrements, which being accumulated, demand excretion. Quincy uſes orgaſm for an impetuous or too quick motion of the blood or ſpirits; whereby the muſcles are diſtended with an uncommon force.

ORGAZ, a town of Spain, in New Caſtile, with a fort, 15 miles S. of Toledo. Lon. 3. 22. W. Lat. 39. 36. N.

ORGE, a river of France, which runs into the Seine, 30 miles S. of Paris.

* ORGEIS. *n. ſ.* A ſea-fiſh, called likewiſe ORGANLING. Both ſeem a corruption of the Orkney ling, as being taken on the Orkney coaſt. *Ainſ.*

ORGELET, a town of France, in the dep. of the Jura, 7 miles S. of Lons, and 20 S. of Poligny.

ORGERES, a town of France, in the dep. of Eure and Loire; nine miles SW. of Janville.

ORGETORIX, a chief man among the Helvetii, while J. Cæſar was in Gaul. He conſpired againſt the Romans, and when accuſed, killed himſelf. *Cæſ.*

(1.) ORGIA, feaſts and ſacrifices in honour of Bacchus, held every 3d year, and chiefly celebrated by wild diſtracted women, called *Bacchæ.* The chief ſolemnities were performed in the night, to conceal, perhaps, their ſhocking impurities; and a mountain was generally choſen as the place of celebration. They were inſtituted by Orpheus; and from him are ſometimes called ORPHICA. Authors are not agreed as to the derivation of the word; but from the frantic proceedings of the Bacchanalians, ὀργη, *furor*, ſeems to be the true etymology. See BACCHANALIA.

(2.) ORGIA, according to Servius was a common name for all kinds of ſacrifices among the Greeks, as *ceremonia* was amongſt the Romans.

* ORGIES. *n. ſ.* [*orgies*, Fr. *orgia*, Lat.] Mad rites of Bacchus; frantic revels.

Solemn to the ſhining rites
Of the fairy prince and knights,
While the moon their *orgies* lights. *Ben Jonſ.*
She feign'd nocturnal *orgies.* *Dryden.*

* ORGILLOUS. *adj.* [*orgueilleux*, Fr.] Proud; haughty. Not in uſe.—

The princes *orgillous*, their high blood chafed,
Have to the port of Athens ſent their ſhips.
Shak.

ORGIVA, a town of Spain, in Granada, 25 miles S. of Granada. Lon. 3. 50. W. Lat. 36. 43. N.

ORGNES, a town of France, in the department of the Lower Alps; 6 miles N. of Forcalquier, and 10½ S. of Siſteron.

(1.) ORGON, a river of Chineſe Tartary, which riſes in Lon. 119. 6 E. of Ferro; Lat. 46. 56. N. and runs into the Selinque, in Lon. 124. 0. Lat. 50. 0. N.

(2.) ORGON, a town of France, in the dep. of the Mouths of the Rhone, on the Durance, 9 miles N. of Salon, and 16½ E. of Taraſcon.

(1.) ORGUES, in the military art, are thick long pieces of wood, pointed at one end, and ſhod with iron, cleat one of another; hanging each by a particular rope or cord, over the gateway of a ſtrong place, perpendicularly, to be let fall in caſe of the approach of an enemy. Orgues are preferable to herſes or portcullices, becauſe theſe may be either broke by a petard, or they may be ſtopped in their falling down; but a petard is uſeleſs againſt an orgue, for if it break one or two of the pieces, they immediately fall down again and fill up the vacancy; or if they ſtop one or two of the pieces from falling, it is no hindrance to the reſt: for being all ſeparate, they have no dependence upon one another.

(2.) ORGUES is alſo uſed for a machine compoſed of ſeveral harquebuſs or muſket barrels bound together, by means whereof ſeveral exploſions are made at the ſame time. It is uſed to defend breaches and other places attacked.

ORGYA [ὀργυια], an ancient Grecian meaſure containing ſix feet.

ORHEI, a town of European Turkey, in Moldavia, on the Reus; 84 miles ENE of Jaſſi.

ORI, a town of Sardinia, 8 m. SE. of Saſſari.

(1.) ORIA, a town of Naples, in Otranto, at the foot of the Appennines; 40 miles NW. of Otranto. Lon. 17. 48. E. Lat. 40. 39. N.

(2.) ORIA, a town of Spain, in Granada.

(1.) ORIAGO, a diſtrict in Paduano, watered by the Brenta, containing one town, ſeven villages, and about 7000 ſouls.

(2.) ORIAGO, an agreeable market town, in the above diſtrict, with a church and about 800 inhabitants, on the S. bank of the Brenta.

ORIBASIA, in botany: A genus of the monogynia order, belonging to the pentandria claſs of plants, and in the natural method ranking under the 47th order, *Stellatæ.* The corolla is ſmall, tubullated, and monopetalous. The pericarpium is a globular berry, grooved longitudinally; is quinquelocular, and contains one ſeed. Of this there are ſix ſpecies, all natives of the warmer parts of America, viz.

1. ORIBASIA LONGIFLORA, } See N° 4—6.
2. ORIBASIA LUTEA; }

3. ORIBASIA

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3. ORIBASIA OFFICINALIS. The natives of Guiana make infusions of the leaves for spasmodic asthma

4. ORIBASIA PANICULATA; 5. ORIBASIA RACEMOSA; 6. ORIBASIA VIOLACEA. } The habits of all these six species resemble those of PSYCHOTRIA.

ORIBASIUS, or ORIBASUS, a celebrated physician, greatly esteemed by the emperor Julian, in whose reign he flourished. He abridged the works of Galen, and of all the most respectable writers on physic, at the request of the emperor. He accompanied Julian into the east, but his skill proved ineffectual in attempting to cure the fatal wound which his benefactor had received. After Julian's death he fell into the hands of the barbarians. The best edition of his works is that of Dundas, 4to. Lug. Bat. 1745

(1.) * ORICHALCH. *n. s.* [*orichalcum*, Latin.] Brass.—

Not Bilbo steel, nor brass from Corinth fet,
Nor costly *orichalch*. *Spenser.*

(2.) ORICHALCH, or ORICHALCUM, a metallic substance resembling gold in colour, but very inferior in value. It was well known to the old Romans, who often took advantage of its resemblance to gold; for some sacrilegious characters, who could not resist the temptation of taking gold from temples and other public places, chose to conceal their guilt by substituting orichalcum for it. It was thus that Julius Cæsar acted, when he robbed the capitol of 3000 pound weight of gold; in which he was followed by Vitellius, who despoiled the temples of their gifts and ornaments, and put this inferior metal in their place. It has been a matter of dispute with philosophers and others, what this metal could be, or how it was procured or made; it is probable at least that it was greatly analogous to our brass, if not wholly the same with it. (See BRASS.) The resemblance of brass to gold, in colour, is obvious at first sight. Both brass and gold are susceptible of a variety of shades of yellow, in proportion to their alloy with copper; but the nearness of the resemblance is sufficiently proved by the difficulty of distinguishing substances gilded with brass or *Dutch leaf* from such as are gilded with gold leaf. The Romans knew the manner of making *Orichalcum*, and the materials from which they made it were the very same from which we make brass. There are, indeed, authors of repute who think otherwise. M. Cronstedt does not think it just to conclude from old coins and other antiquities, that it is evidently proved that the making of brass was known in the most ancient times; and the authors of the French Encyclopedie assure us, that our brass is a very recent invention. It appears, however, from Pliny's *Nat. Hist.* lib. xxxiv. § 2. and from the concurring testimony of other writers, that orichalcum was not a pure or original metal; but that its basis was copper, which the Romans changed into orichalcum by means of CADMIA, a species of earth which they threw upon the copper, and which it absorbed. The testimony of Ambrose, Bishop of Milan, in the 4th century, of Primasius, Bishop of Adrumentum, in Africa, in the 6th, and of Isidorus, Bishop of Seville in the 7th, all confirm Pliny's account. We may therefore safely conclude, that the Romans knew the method of making brass by mixing *cadmia* or *calamine* with copper; yet it is probable they were not the inventors of this art. It appears from a variety of testimonies, that brass was made in Asia, in a manner very similar to that at Rome; and it is supposed that in India it was made in the remotest ages. It is generally supposed that there were two sorts of orichalcum, one factitious, the other natural. The factitious, whether we consider its qualities or composition, appears to have been the same with our brass. As to the natural orichalcum, it is not impossible that copper ore may be so intimately blended with ore of zinc, or of some other metallic substance, that the compound, when smelted, may yield a mixed metal of a paler hue than copper, and resembling the colour of either gold or silver. In Du Halde's history of China, we meet with the following account of the Chinese white copper. "The most extraordinary copper is called *de-tong*, or white copper; it is white when dug out of the mine, and still more white within than without. It appears by a vast number of experiments made at Peking, that its colour is owing to no mixture; on the contrary, all mixtures diminish its beauty; for, when it is rightly managed, it looks exactly like silver; and were there not a necessity of mixing a little *tutenag*, or some such metal with it, to soften it and prevent its brittleness, it would be so much the more extraordinary, as this sort of copper is perhaps to be met with nowhere but in China, and that only in the province of *Yun-nan*." (Vol. i. p. 16.) Notwithstanding this, it is certain that the Chinese white copper, as brought to us, is a mixed metal; so that the ore from which it is extracted must consist of various metallic substances, and from some such ore it is possible that the natural orichalcum, if ever it existed, may have been made. But though the existence of natural orichalcum cannot be proved impossible, yet there is reason to doubt whether it ever had a real existence. We know of no country in which it is now found; nor was it anywhere found in the age of Pliny; nor does he seem to have known the country where it ever had been found. Plato acknowledges, that orichalcum was a thing only talked of in his time; it was nowhere then to be met with, though in the island of Atlantis it had been formerly extracted from its mine. The Greeks were in possession of a metallic substance, called *orichalcum*, before the foundation of Rome; for it is mentioned by Homer and by Hesiod in such a manner as shows that it was then held in great esteem. Other ancient writers have expressed themselves in similar terms of commendation; and it is principally from the circumstance of the high reputed value of orichalcum that authors are induced to suppose the ancient orichalcum to have been a natural substance. But this conclusion cannot be justly drawn from their encomiums upon it; for at whatever time the method of making it was first discovered, both its novelty and scarceness, joined to its utility, would enhance its value. Respecting the etymology of the word there is great diversity of opinions. Those who write it *aurichalcum* think it is composed of the Latin word *aurum*, *gold*, and the Greek χαλκος, *brass* or *copper*,

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copper. The moſt general opinion is, however, that it is compoſed of ὄρος, *a mountain*, and χαλκος, alluding to its being found in mountains. See *Mem. of the Lit. and Philoſ. Soc. of Manch.* vol. 2. The following etymology is alſo given, which ſeems equally well founded, and is as ingenious as either. The Hebrew word *Or*, *Aur*, ſignifies *light*, *fire*, *flame*; the Latin terms *uro*, *to burn*, and *aurum*, *gold*, are derived from it, inaſmuch as gold reſembles the colour of flame; and hence it is not improbable, that orichalcum may be compoſed of an Hebrew and a Greek term, and that is rightly rendered *flame coloured copper*. In confirmation of this, the Latin epithet *lucidum*, and the Greek one φαεινον, are both applied to orichalcum by the ancients.

ORICUM, or } an ancient town of Epirus, with
ORICUS, } a good harbour, on the Ionian Sea, founded by a colony from Colchis; called alſo *Dardania*, becauſe Helenus, the ſon of Priam, king of Troy or Dardania, reigned in it along with Andromache, after the deſtruction of Troy. *Liv.* xxiv. 40. *Plin* ii. 89.

(1.) * ORIENT. *adj* [*oriens*, Lat.] 1. Riſing as the ſun.

Moon, that now meet'ſt the *orient* ſun, now fly'ſt
With the fixed ſtars. *Milton's Par. Loſt.*
When fair morn *orient* in heaven appear'd. *Milton.*

2. Eaſtern; oriental. 3. Bright; ſhining; glittering; gaudy; ſparkling.—

The liquid drops of tears that you have ſhed,
Shall come again transform'd to *orient* pearl. *Shak.*

—There do breed yearly an innumerable company of gnats, whoſe property is to fly into the eye of the lion, as being a bright and *orient* thing. *Abbot on the World.*—We have ſpoken of the cauſe of *orient* colours in birds; which is by the fineneſs of the ſtrainer. *Bacon's Nat. Hiſt.*—

Morning light,
More *orient* in yon weſtern cloud that draws
O'er the blue firmament a radiant white. *Milt.*
He offers to each weary traveller
His *orient* liquor in a cryſtal glaſs. *Milton.*
The chiefs about their necks the ſcutcheons wore,
With *orient* pearls. *Dryden.*

(2.) * ORIENT. *n. ſ.* [*orient*, Fr.] The eaſt; the part where the ſun firſt appears.

(3.) ORIENT, or PORT L'ORIENT, a handſome ſea-port town of France, in the dep. of Morbihan, and ci-devant prov. of Bretagne, on the bay of St Louis; built in 1720. The Eaſt India company have large magazines in it. The Engliſh attempted to become maſters of it in 1746, but miſcarried. It has a good harbour, and contains about 1500 citizens, and is five miles from Hennebon. Lon. 3. 22. W. Lat. 47. 45. N.

(1.) * ORIENTAL. *adj.* [*oriental*, French.] Eaſtern; placed in the eaſt; proceeding from the eaſt.—Your ſhips went as well to the pillars of Hercules as to Pequin upon the *oriental* ſeas. *Bacon's New Atlantis.*—Some aſcribing hereto the generation of gold, conceive the bodies to receive ſome appropriate influence from the ſun's aſcendant and *oriental* radiations. *Brown.*

(2.) * ORIENTAL. *n. ſ.* An inhabitant of the eaſtern parts of the world.—They have been of that great uſe to following ages, as to be imitated by the Arabians and other *orientals*. *Grew.*

(3.) ORIENTAL PHILOSOPHY. See PHILOSOPHY.

* ORIENTALISM. *n. ſ.* [from *oriental*.] An idiom of the eaſtern languages; an eaſtern mode of ſpeech.

* ORIENTALITY. *n. ſ.* [from *oriental*.] State of being oriental.—His revolution being regular, it hath no efficacy peculiar from its *orientality*, but equally diſperſeth his beams. *Brown.*

* ORIFICE. *n. ſ.* [*orifice*, Fr. *orificium*, Lat.] Any opening or perforation.—The prince of Orange, in his firſt hurt by the Spaniſh boy, could find no means to ſtaunch the blood, but was fain to have the *orifice* of the wound ſtopped by men's thumbs, ſucceeding one another for the ſpace of two days. *Bacon.*—

Their mouths
With hideous *orifice* gaped on us wide,
Portending hollow truce. *Milton's Par. Loſt.*

—Ætna was bored through the top with a monſtrous *orifice*. *Addiſon's Guardian.*—Blood letting, Hippocrates ſaith, ſhould be done with broad lancets or ſwords, in order to make a large *orifice*. *Arb.*

* ORIFLAMB. *n. ſ.* [probably a corruption of *auriflamma*, Lat. or *flamme d'or*, Fr. in like manner as *orpiment* is corrupted.] A golden ſtandard. *Ainſ.*

(1.) ORIGAN. *n. ſ.* [*origan*, Fr. *origanum*, Lat.] Wild marjoram.—

I ſaw her in her proper hue,
Bathing herſelf in *origan* and thyme. *Spenſer.*

(2.) ORIGAN. See ORIGANUM. N° 8.

ORIGANUM, ORIGANY, or MARJORAM: A genus of the gymnoſpermia order, belonging to the didynamia claſs of plants, and in the natural method ranking under the 42d order, *Verticillatæ*. There is a ſtrobilus or cone collecting the calices together. The principal ſpecies are, two hardy perennials and an annual for the open ground, and five perennials for the green-houſe: viz.

1. ORIGANUM ÆGYPTIACUM, *Egyptian Origany*. See N° 3.

2. ORIGANUM CRETICUM, *Cretan Origany*. See N° 3.

3. ORIGANUM DICTAMNUS, *Dittany of Crete*. This holds the firſt rank among the medicinal plants produced in Crete. The praiſes beſtowed on its virtues by the ancients are altogether extravagant; yet we perhaps treat its medicinal virtues with too much contempt. Its leaf is very balſamic, and its flower diffuſes a delicious odour. The inhabitants of Crete apply it with ſucceſs on various occaſions. The leaf, when dried and taken in an infuſion with ſugar, makes a very pleaſant drink, of a finer flavour than tea. It is there an immediate cure for a weak ſtomach. Theſe 3 ſpecies, as well as the SIPYLÆUM and SMYRNÆUM (N° 6. and 7.) aſſume an under-ſhrubby growth, often with abiding ſtalks, if they have ſhelter in winter.

4. ORIGANUM HERACLEOTICUM, or winter ſweet marjoram; a finely ſcented aromatic, excellent for culinary purpoſes, particularly for broths, ſoups, &c. It is alſo uſeful for giving fragrance to ointments, and other medical purpoſes; ſo that it is proper both for kitchen and phyſic gardens, and may alſo be employed in the pleaſure ground.

5. ORIGANUM MARJORANUM, or *annual ſweet marjoram*, is an aromatic of the higheſt fragrance,

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is admirable for kitchen use, and excellent for nosegays; so is proper both for the kitchen and pleasure garden, but more particularly for the former. It is often called *knotted marjoram*, from the flowers growing in close knotted-like heads.

6. ORIGANUM SIPYLEUM, or *Origany of Mount Sipylus*. See N° 3.

7. ORIGANUM SMYRNÆUM, the *Smyrna Origany*. See N° 3.

8. ORIGANUM VULGARE, the common *wild pot marjoram*, possesses the same properties with the HERACLEOTICUM. (See N° 4.) All these 8 species flower in July and August; the flowers are small, monopetalous, ringent, universally hermaphrodite; and collected into verticilli round the stalks; succeeded by ripe seed in autumn; though in this country the annual marjoram and the 3 greenhouse sorts seldom perfect seed well, unless the autumn proves remarkably fine and warm: in default, however, of seed, the propagation of all the perennial sorts, both hardy and green-house kinds, is easily effected by slips of the roots, &c. And the seed of the annual sort is imported plentifully from France and Italy.

(1.) ORIGEN, one of the most celebrated ecclesiastical writers, greatest geniuses, and most learned men of the primitive church, during the 3d century, was born at Alexandria, A. D. 185; and was surnamed *Adamantius*, either from his indefatigable application to study, or from the firmness he discovered amidst the torments he suffered for the faith. Leonidas his father trained him with great care, and made him study the Holy Scriptures from his infancy, in which he made surprising progress; and very early manifested a rage for expounding the Scriptures allegorically, which he afterwards carried to great excess. He had afterwards, in philosophy, Ammonius the celebrated Christian philosopher, and St Clement of Alexandria, for his instructors. At 18 years of age he succeeded that great man in the office of catechist; an important employment, which consisted in teaching divinity, and expounding the scriptures. Leonidas his father had suffered martyrdom the year before, during the persecution of Severus in 202; and Origen had shown such eagerness to follow his father to martyrdom, that his mother was obliged to hide his clothes to prevent his going abroad. Origen had a great concourse of auditors who attended his school, some of whom were of the faithful, and others pagan. He confirmed and strengthened the first in their faith, and converted most of the others; and there were such a number of martyrs amongst his disciples, that it might be said that he kept rather a school of martyrdom than of divinity. He taught the doctrines of Christianity to the women as well as to the men; and taking in a too literal sense what Christ says of becoming voluntary eunuchs, castrated himself, to prevent his deserving or suffering scandal. He took a voyage to Rome in 212, in the beginning of Caracalla's reign, and under the pontificate of Zepherinus. At his return he published many works, by which he acquired an extraordinary reputation, that drew to him a great number of auditors. But Demetrius, Bp. of Alexandria, conceiving a jealousy of him, endeavoured by various pretences to injure him. At length Origen went to Antioch, whether the empress Mammæa had sent for him to hear him discourse on the Christian religion. He returned to Alexandria, where he continued to teach till the year 228, when he travelled into Achaia and Palestine, and was ordained by the bishops of that province at 42 years of age. His being ordained by foreign bishops, without the permission of Demetrius, renewed that prelate's resentment; on which Origen returned to Alexandria, to endeavour to mollify him: but Demetrius drove him thence in 231, and caused him to be excommunicated, and even deposed in a council held at Egypt. Origen then returned to Cæsarea in Palestine, where he raised a celebrated school, and had St Gregory Thaumaturgus, and a great number of illustrious persons, among his disciples. He afterwards travelled to Athens; and at the desire of Firmilianus, staid some time at Cæsarea in Cappadocia; whence he was invited into Arabia. Under the 9th persecution of the Christians in the reign of Decius, none were used with greater severity than Origen. He supported with incredible constancy the dreadful torments which his persecutors invented against him. He died at Tyre in 254, aged 69. He was the author of a great number of excellent works. The principal of those extant are, 1. A Treatise against Celsus; 2. A great number of Homilies, with Commentaries on the Holy Scriptures. 3. *Philocalia*, and several other treatises. 4. Fragments of his *Hexapla*, collected by father Montfaucon, 2 vols. folio. Of all Origen's books, the loss of his Hexaples is most to be regretted. This work was thus named from its containing six columns; in the first of which was the Hebrew text of the Bible; in the 2d the same text in Greek characters; in the 3d the Greek version of the Septuagint; in the 4th that of Aquila; in the 5th that of Symmachus; and in the 6th that of Theodosian. This admirable book gave the first hint for our Polyglot Bibles. 5. The book of Principles; of which we have only an incorrect Latin version. In all his writings he discovers a surprising degree of modesty, candour, and humility; a noble and sublime genius, profound learning, and vast erudition. His manners were extremely pure, and he had a warm zeal for spreading the gospel. He had quick parts; a strong imagination, and a happy invention; and he wrote with so much ease, that he is said to have dictated to 7 or 8 amanuenses at a time. He was well acquainted with the sciences.

2. ORIGEN, a Platonic philosopher, and the disciple and friend of Porphyry, who studied philosophy under Ammonius: supposed to have been the founder of the ORIGENIANS.

ORIGENIANI, } ancient heretics, who even
ORIGENIANS, } surpassed the abominations of the Gnostics. Epiphanius speaks of them as subsisting in his time; but their numbers, he says, were inconsiderable. He fixes their rise about the time of the great *Origen*; but distinguishes them from the ORIGENISTS, whom he derives from *Origen Adamantius*. And St Augustine expressly asserts, that it was another Origen. Their doctrines were shameful: they rejected marriage; they used several apocryphal books, as the acts of St Andrew, &c. and endeavoured to excuse their

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open vices by saying, that the catholics did the same in private.

ORIGENISTS, in church history, a Christian sect in the 4th century, so called from their drawing their opinions from the writings of Origen. The Origenists maintained, that the souls of men had a pre-existent state; that they were holy intelligences, and had sinned in heaven before the body was created; that Christ is only the Son of God by adoption; that he has been successively united with all the angelical natures, and has been a cherub, a seraph, and all the celestial virtues one after another; that, in future ages, he will be crucified for the salvation of the devils, as he has already been for that of men; and that their punishment, and that of the damned, will continue only for a certain limited time.

* ORIGIN. } *n. s.* [*origine*, Fr. *origo*,
(1.) * ORIGINAL. } Lat.] 1. Beginning; first existence.—The sacred historian only treats of the *origins* of terrestrial animals. *Bentley's Sermons.* 2. Fountain; source; that which gives beginning or existence.—

Nature, which contemns its *origin*,
Cannot be border'd certain in itself. *Shak.*

—Their posterity have no reason to blush at the memory of such an *original*. *Atterbury.*—Some philosophers have placed the *original* of power in admiration. *Davenant.*—

Original of beings! pow'r divine! *Prior.*
These great orbs,
Primitive founts, and *origins* of light. *Prior.*

3. First copy; archetype; that from which any thing is transcribed or translated. In this sense *origin* is not used.—Compare this translation with the *original*. *Addison.*—External material things, as the objects of sensation; and the operations of our minds within, as the object of reflection, are the only *originals* from whence all our ideas take their beginnings. *Locke.* 4. Derivation; descent.

An impious, arrogant, and cruel brood,
Expressing their *original* from blood. *Dryden.*

2. * ORIGINAL. *adj.* [*originel*, Fr. *originalis*, Latin.] Primitive; pristine; first.—The *original* question was, whether God hath forbidden the giving any worship to himself by an image? *Stillingfleet.*—Had Adam obeyed God, his *original* perfection, the knowledge and ability God at first gave him, would still have continued. *Wake.*—

Kind nature forming them, the pattern took
From heav'n's first work, and Eve's *original*
look. *Prior.*

(3.) ORIGINAL SIN. See THEOLOGY.

* ORIGINALLY. *adv.* [from *original*.] 1. Primarily; with regard to the first cause; from the beginning.—A very great difference between a king that holdeth his crown by a willing act of estates, and one that holdeth it *originally* by the law of nature and descent of blood. *Bacon.*—God is *originally* holy in himself. *Pearson.*—A present blessing upon our facts is neither *originally* due from God's justice, nor becomes due to us from his veracity. *Smallridge.* 2. At first.—The metallic and mineral matter, found in the perpendicular intervals of the strata, was *originally*, and at the time of the deluge, lodged in the bodies of those strata. *Woodward.* 3. As the first author.—

For what *originally* others writ,
May be so well disguis'd and so improv'd,
That with some justice it may pass for yours.
Roscommon.

* ORIGINALNESS. *n. s.* [from *original*.] The quality or state of being original.

* ORIGINARY. *adj.* [*originaire*, Fr. from *origin*.] 1. Productive; causing existence.—The production of animals in the *originary* way, requires a certain degree of warmth. *Chyne.* 2. Primitive; that which was the first state.—

Remember, I am built of clay, and must
Resolve to my *originary* dust. *Sandys.*

(1.) * *To* ORIGINATE. *v. a.* [from *origin*.] To bring into existence.

(2.) * *To* ORIGINATE. *v. n.* To take existence.

* ORIGINATION. *n. s.* [*originatio*, Lat. from *originate*.] 1. The act or mode of bringing into existence; first production.—The tradition of the *origination* of mankind seems to be universal, but the methods of that *origination*, excogitated by the heathen, were particular. *Hale.*—This eruca is propagated by animal parents, to wit, butterflies, after the common *origination* of all caterpillars. *Ray.*—Des-cartes first introduced the fancy of making a world, and deducing the *origination* of the universe from mechanical principles. *Keil.* 2. Descent from a primitive.—The Greek word used by the apostles to express the church, signifieth, a calling forth, if we look upon the *origination*. *Pearson.*

(1.) ORIGNY, Peter Adam, a late French soldier, historian and chronologist; who published a history of ancient Egypt, and a System of Egyptian Chronology. He died in 1774.

(2.) ORIGNY, a town of France, in the department of the Aisne, 7½ miles E. of St Quentin.

ORIGUELA, or } a town of Spain, in Valentia,
(1.) ORIHUELA, } seated between the mountains on the banks of the Segura, in a place fortified by nature, and in a very fertile plain, abounding in all things, especially corn. It is surrounded with pleasant gardens, and has a university and a bishop's see. It is defended by an old castle; and is the capital of a government, independent of Valentia, whose jurisdiction extends 30 miles in length, and 15 in breadth. It is Lon. 40. 56. W. Lat. 38. 42. N.

(2.) ORIHUELA, a town of Spain, in Arragon.

ORIJIVA, a town of Spain, in Grenada.

ORILLON, in fortification, is a small rounding of earth, faced with a wall; raised on the shoulder of those bastions that have casemates, to cover the cannon in the retired flank, and prevent their being dismounted by the enemy. See FORTIFICATION, *Part* I. *Sect.* IV.

ORING, a lake of Thibet, 63 miles in circumference, Lon. 115. 15. E. Ferro. Lat. 34. 47. N.

ORINGA, a sea-port of Japan, in Niphon.

ORINSAY, one of the HEBRIDES, between Boreray and N. Uist, separated from the latter by a narrow sound, which is dry at low water. The soil is sandy but fertile.

ORINUS, a river of ancient Sicily.

ORINXA, a town of Persia, in Irac.

(1.) ORIO, a town of Spain, in Guipuscoa.

(2.) ORIO, a town of Spain, in Guipuscoa, at the

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the mouth of the Orio, 8 miles SW. of St Sebaſtian. Lon. 2. 19. W. Lat. 43. 23. N.

(3.) ORIO, a town of Negropont, 44 miles N. of Negropont.

ORIOLE, } in ornithology, a genus belonging
ORIOLUS, } to the order of pica. The bill in this genus is ſtrait, conic, very ſharp-pointed; edges cultrated, inclining inwards; mandibles of equal length. Noſtrils ſmall, placed at the baſe of the bill, and partly covered: Tongue divided at the end: Toes, 3 forward, one backward; the middle joined near the baſe to the utmoſt one. Theſe birds are moſtly inhabitants of America; are a noiſy, gregarious, frugivorous, granivorous, and voracious race, very numerous, and often have penſile neſts. The ſeveral ſpecies (which are very numerous, for Mr Latham enumerates and deſcribes 45), are chiefly diſtinguiſhed by their colour. See *Plate* XXII.

1. ORIOLUS ACUTA CAUDA, the *ſharp-tailed oriole*, is about the ſize of a lark: The bill is duſky; the crown is brown and cinereous: the cheeks are brown, bounded above and below with deep dull yellow. The throat is white; the breaſt, ſides, thighs, and vent, are a dull pale yellow, ſpotted with brown; the belly is white; the back is varied with aſh-colour, black and white; the wing-coverts are duſky, with ferruginous edges. The quills are alſo duſky; the tail conſiſts of narrow ſharp-pointed feathers, of a duſky colour, tinged with olive, and obſcurely barred; and the legs are pale brown.

2. ORIOLUS BALTIMORUS, of Linnæus, the *Baltimore bird* of Cateſby and Latham, *le Baltimore* of Buffon, and the *Baltimore oriole* of Pennant, is an inhabitant of North America; which it quits before winter, and probably retires to Mexico, the XOCHITOLL of Fernandez ſeeming to be of the ſame ſpecies. The head, throat, neck, and upper part of the back of the male, is black; the leſſer coverts of the wings orange; the greater black, tipt with white; the breaſt, belly, lower part of the back, and coverts of the tail, of a bright orange; the primaries duſky, edged with white; the two middle feathers of the tail black; the lower part of the ſame colour, the remaining part orange; and the legs black. The head and back of the female is orange, edged with pale brown; the coverts of the wings of the ſame colour, marked with a ſingle bar of white; the under ſide of the body and coverts of the tail yellow; the tail duſky, edged with yellow. The length both of the male and female is 7 inches. This ſpecies ſuſpend their neſts to the horizontal forks of the tulip and poplar trees, formed of the filaments of ſome tough plants curiouſly woven, mixed with wool, and lined with hair. The neſt is of a pear ſhape, open at top, with a hole on the ſide through which the young diſcharge their excrements, and are fed. In ſome parts of North America, this ſpecies, from its brilliant colour, is called the *fiery hang-neſt*. It is named the *Baltimore Bird* from its colours, reſembling thoſe in the arms of Lord Baltimore, whoſe family were proprietors of Maryland. There are ſeveral other ſpecies of orioles, all inhabitants of North America. Theſe, according to Mr Pennant, are the white-backed, the baſtard, the black, the brown-headed, the ruſty, the white-headed, the Hudſonian white-headed, the olive, the yellow-throated, the Unalaſchka, and the red-wing. This laſt ſpecies, in America, is named *the red-winged ſtarling*, and the *ſwamp black-bird*. Although they appear at New York only from April to October, they probably continue through the whole year in the ſouthern parts. They are ſeen at times in ſuch prodigious flocks, as even to obſcure the ſky. They were eſteemed the peſt of the colonies, making moſt dreadful havock among the maize and other grain, both when new ſown and when ripe. They are very bold, and not to be terrified by a gun; for after the ſportſman makes ſlaughter in a flock, the remainder will take a ſhort flight, and ſettle again in the ſame field. The farmers ſometimes attempt their deſtruction, by ſteeping the maize, before they ſow it, in a decoction of white hellebore. This potion is particularly aimed at the purple jackdaws, which conſort in myriads with this ſpecies. But theſe ſeemingly deſtructive birds are not formed in vain. Notwithſtanding they cauſe ſuch havock among the grain, they make ample recompence, by clearing the ground of the noxious worms with which it abounds; particularly the *Bruchus Piſi*, or *Peaſe Beetle*. (See BRUCHUS, N° 5; and GRACULA, N° 3.) There is another variety of this ſpecies, called the *baſtard Baltimore*. Its ſize is that of the true Baltimore, but it meaſures ſomewhat leſs in length: the bill is lead-coloured; the forehead and cheeks black mixed with yellow; the hind head and nape are olive grey, marked with a few ſpots of black; the upper part of the back is the ſame, but ſomewhat duller; the lower part of the back, the rump, fore part of the neck, breaſt, belly, ſides, thighs, upper and lower tail-coverts, and under the wings, are orange yellow, but brighteſt on the breaſt and tail-coverts; the leſſer wing coverts are deep brown; the greater are the ſame, tipped with dirty yelloviſh white: the quills are brown, bordered on both edges with white; the two middle tail feathers are olive, then blackiſh, marked at the end with a longitudinal yelloviſh ſpot; the next on each ſide are olive and black, confuſedly mixed; and the four outer ones are of a yelloviſh olive: the legs and claws are bluiſh. They inhabit North America. There ſeems to be great confuſion and uncertainty as to the true and baſtard Baltimores and their females; perhaps they are only varieties of one ſpecies referable to one or other ſex of the true Baltimore, in the different ſtages of life. See Mr Latham's *Synopſis of Birds*, where the whole genus is minutely and accurately deſcribed.

(1.) ORION, in aſtronomy, one of the conſtellations of the ſouthern hemiſphere. The ancients placed it near the feet of the bull. It was compoſed of 17 ſtars in the form of a man holding a ſword; for which reaſon the poets often ſpeak of Orion's ſword. As the conſtellation of Orion, which riſes about the 9th day of March, and ſets about the 21ſt of June, is generally ſuppoſed to be accompanied at its riſing with great rains and ſtorms, it has the epithet of *aquoſus* given it by Virgil. The name is formed from the Greek ὠρύω,

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to make water: the ancients supposing that it occasioned floods at its rising and setting. See ASTRONOMY, *Index*; and § 548.

(2.) ORION, in mythology, was the son of Jupiter, Neptune, and Mercury. For as these gods were visiting the earth, they entered the house of HYRIEUS, a native of Tanagra, in Boeotia, as benighted travellers, he being famed for hospitality to strangers. Hyrieus treated them generously, and even killed an ox, the only one he had, for their entertainment. At which the gods were so pleased, that they offered the old man whatever he would ask; who said he desired nothing so much as a son. Upon this they caused the ox's hide to be brought before them, in which, having deposited their urine, they bade him keep it under ground for 9 months. He then dug for the skin, and found in it a beautiful child whom he called *Urion* from *urina*; afterwards changed into Orion. Orion soon became conspicuous; and Diana took him among her attendants, and even became deeply enamoured of him. His gigantic stature, however, displeased ŒNOPION king of Chios, whose daughter Hero or Merope he requested in marriage. The king, not willing to deny him openly, promised to make him his son-in-law as soon as he delivered his island from wild beasts. This task, which Œnopion supposed to be impracticable, was soon performed by Orion, who demanded his reward. Œnopion, on pretence of complying, intoxicated his illustrious guest, and put out his eyes on the sea-shore, where he had laid himself down to sleep. Orion found himself blind when he awoke. He went, directed by the sound, to a neighbouring forge, where he placed one of the workmen on his back, and by his directions went to a place where the rising sun was seen with the greatest advantage. Here he turned his face towards the luminary, recovered his eye-sight, and hastened to punish the perfidious cruelty of Œnopion. Orion was an excellent workman in iron, and fabricated a subterraneous palace for Vulcan. Aurora, whom Venus had inspired with love, carried him away into the island of Delos, that she might enjoy his company; but Diana, who was jealous of this, killed him with her arrows. Some say, that Orion had provoked Diana's resentment, by offering violence to Opis, one of her female attendants; or, as others say, because he had attempted the virtue of the goddess herself. Perhaps the fable means, that Orion was an astronomer, who lost his sight, and at last his life by studying the moon and stars in cold nights. According to Ovid, Orion died of the bite of a scorpion, which Terra produced to punish his vanity, in boasting that no animal in earth could conquer him. Some say that Orion was son of Neptune and Euryale, and that he received from his father the privilege and power of walking over the sea without wetting his feet. Others assert that he was a son of Terra, like the rest of the giants. He had married a nymph called SIDA, before his connection with the family of Œnopion; but Sida was the cause of her own death, by boasting herself fairer than Juno. Diodorus says, that Orion was a celebrated hunter, superior to the rest of mankind, by his strength and uncommon stature. He built the fleet of Zancle, and fortified the coast of Sicily against the inundations of the sea, by heaping a mountain of earth called PELORUS, on which he built a temple to the gods of the sea. After death Orion was placed in heaven, and changed into a constellation. Orion was buried in the island of Delos; and the monument which the people of Tanagra in Boeotia shewed, as containing his remains, was a Cenotaph. The daughters of Orion distinguished themselves as much as their father; and when the oracle had declared that Boeotia should not be delivered from a dreadful pestilence before two of Jupiter's children were immolated on the altars, they voluntarily sacrificed themselves for the good of their country. Their names were Metrippe and Metioche. They had been carefully educated by Diana; and Venus and Minerva had made them very rich and valuable presents. The infernal deities were struck at the patriotism of these two females; and instantly two stars arose from the earth, which still smoked with their blood, and they were placed in the heavens in the form of a crown. According to Ovid, their bodies were burned by the Thebans, and from their ashes arose two perdices, whom the gods soon after changed into constellations.

(1.) * ORISONS. *n. f.* [*oraison*, French.] This word is variously accented; *Shakspeare* has the accent both on the first and second syllables; *Milton* and *Crashaw* on the first, others on the second.] A prayer; a supplication.—

Nymph, in thy *orisons*
Be all thy sins remember'd. *Shak. Hamlet.*

Alas! your too much love and care of me
Are heavy *orisons* 'gainst this poor wretch. *Shak.*

—He went into St Paul's church, where he had *orisons* and Te Deum sung. *Bacon's Henry VII.*—

My wakeful lay shall knock
At th' oriental gates, and duly mock
The early larks shrill *orisons*. *Crashaw.*

His daily *orisons* attract our ears. *Stanley's Job.*

Lowly they bow'd, adoring, and began
Their *orisons*, each morning duly paid. *Milton.*

So went he on with his *orisons*,
Which, if you mark them well, were wise ones. *Cotton.*

Here, at dead of night,
The hermit oft, mid his *orisons*, hears
Aghast the voice of time disparting tow'rs. *Dyer.*

The rising sun my *orisons* declares. *Harte.*

(2.) ORISONS. See ORAISON. Dr Johnson has surely made a mistake in this article. *Orison* is used in the *singular* number as well as ORAISON.

ORISSA, or ORIXA. See ORIXA, N° 1.

ORISTAGNI, or ORISTANO, an ancient town of Sardinia, with an archbishop's see. It is pretty large and well fortified; but thinly inhabited, on account of the unhealthy air; it is seated on the W. coast, in a bay of the same name. Lon. 8. 58. E. Lat. 39. 55. N.

ORISTOWN, a town of Ireland, in Meath.

ORITÆ, a nation of India, who submitted to Alexander. *Strabo* 15.

ORITHYIA, in fabulous history, the daughter of

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of Brechthens, K. of Athens, wife of Eneus, and mother of Calais and Zetes, &c. See Boreas, N° 3, and Calais, N° 2.

ORIUNDUS, a river of Illyricum. *Liv.* 44.

(1.) ORIXA, or Orissa, a kingdom of Indostan, lying on the Gulph of Bengal. It is divided from the antient kingdom of Golconda, by a ridge of mountains, the end of which runs a little way into the Sea. It is fertile in corn and cattle, and they have several good towns and harbours on the coast; there are also manufactures of different kinds carried on throughout the kingdom. The prince, is a Gentoo, who pays to the Great Mogul a tribute of about 300,000l. yearly.

(2.) Orixa, in botany, a genus of the monogynia order, belonging to the tetrandria class of plants; and in the natural method ranking with those that are doubtful. The calyx is quadripartite; the petals are four, plain and lanceolated; the stigma globulous; the capsule and seeds unknown. Of this there are two species, viz.

1. Orixa Japonica, and
2. Orixa Tsjuntsjar, both natives of Japan.

* ORK, *n. s.* [*orca*, Latin.] A sort of great fish.

ORKEDAL, a town of Norway, in Drontheim, 18 miles SW. of Drontheim.

ORKEL, a river of Norway, in Drontheim.

ORKENED, a county of Sweden, in Schonen.

(1.) ORKNEY Islands, called Orcades by the ancients, a cluster of islands on the north of Scotland, from which they are separated by a frith 20 miles long, and 10 broad. They are situated between Lon. 0. 2. and 1. 0. W. of Edinburgh; and between Lat. 58. 37. and 59. 15. N.

(2.) Orkney Islands, ancient accounts of the. The Northern Isles of Scotland have been often mentioned by ancient authors, and called by different names from those they now go by; so that it is sometimes difficult to know which of them are meant. The ancient name, however, of the islands, which are the subject of this article, viz. Orcades, has never been disputed. The geographer Mela, Pliny the Elder, and Solinus, the supposed cotemporary with Agricola, all give accounts of the Orcades, more or less just. According to the latter, these islands had not a single inhabitant, and were overgrown with rushy grass. It seems on the whole to be pretty generally allowed, that Julius Agricola, who first sailed round Britain, discovered the Orcades, till then unknown, and subdued them. Claudius was so far from reducing them, (as is affected by Jerom in his Chronicle), that Juvenal mentions them, as not subdued, in Hadrian's time. (Sat. II. 160.) Tacitus informs us, that, before the completion of the first century, the Roman fleets sailed round Scotland, and landed in the Orcades to refresh. The Romans never again visited these islands but once.

(3.) Orkney Islands, Climate, Soil, Produce, Minerals, &c. of the. The air of these islands is moist, on account of the neighbourhood of the sea; and frost and snow do not continue long. In some places the soil is bare and mountainous, and in others sandy and barren; but many of the islands produce large crops of barley and oats. The gardens, when duly cultivated, produce all kinds of kitchen herbs and roots, bringing even fruit trees to maturity; but in the open country, there is scarce a tree or shrub to be seen, except juniper, wild myrtle, heath, and the cyno-bodon: yet this deficiency cannot be imputed to the poverty of the soil, or the nature of the climate; for trunks of large oaks are often dug up in the marshes. Nay, the inhabitants frequently find, deep in the earth, the roots of large trees, evidently exhibiting marks of the axe by which they were felled; so that these northern parts must have undergone some strange revolutions. The Orkneys produce a great variety of herbs and berries, grass and corn. In some of the islands, the natives have discovered mines of tin, lead, and silver, though most of them are wrought to any advantage; in others, abundance of marl, grey and red slate, quarries of freestone and even of marble and alabaster. When the wind rages too any violence, the sea throws in plenty of timber, torn from other countries; and the people often find large pieces of ambergris. The fresh water in these islands is very pure and limpid; and though there are no large rivers, the ground is well watered with lakes and rivulets, that not only turn their mills, but abound with trouts of the most delicate flavour. In these islands some strange effects are produced by thunder and lightning. In 1680, the lightning entered a cow-house, in which 20 cows stood in a row, and killed every second beast as she stood, and left the rest untouched. The distempers that prevail mostly in the Orkneys are agues, consumptions, scurvy, and itch. The agues, which abound in the spring, the natives cure with a diet-drink of bitters and antiscorbutics infused in ale: for phthisical complaints they use the plant orby, and the chrysophyllus marinus boiled with sweet milk.

(4.) Orkney Islands, first settlement of the. It has been asserted, that the Orkneys, as well as the hills of Shetland, were originally peopled from Norway, in the 9th, 10th, or 11th century. Others imagine, that the Picts were the original inhabitants, and call Orkney the ancient kingdom of the Picts. Certain singular houses, now overgrown with earth, are called *Picts Houses*; and the Pentland frith (formerly Pichtland, or Pictsmere,) evidently retains their name. Claudian's lines, cited by Mr Camden, prove, that the Picts, with some other German colonies, particularly the Saxons, were then in possession of these isles; and so Ninnius expressly says. Many of the present inhabitants use the Norse language, which differs but little from the Teutonic or Pictish language, and was in general use till the 17th century; but except in Foula, where a few words are still known by the aged people, it is quite lost. The English tongue, with a Norwegian accent, is that of these islands; but the appearance of the people, in their manners and genius, evidently shew their northern origin. Ninnius, c. 31. puts their arrival at Orkney not less than 300 years after the coming of Brutus into S. Britain, which, he says, was in the time of Eli the Jewish high-priest. The ancient inhabitants are of German original. Some date the first settlement of the Picts here A. M. 4307; when, emigrating from their native country, they planted

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a colony in Orkney, and thence croſſing Pictland frith, and traverſing Caithneſs, Roſs, Murray, Marr, and Angus, ſettled in Fife and Lothian; thence called by our writers *Pictlandia*. Others think they did not ſettle here till the time of Reuther, king of Scotland, when the Picts, joining with a party of the Scots, were repulſed, with the loſs of their king Gethus, and many of the Pictiſh and Scottiſh nobility, with great ſlaughter: but the invaſions of the Britons, at the ſame time, conſtrained the Picts to fly to Orkney, where they choſe for king Gothus their deceaſed ſovereign's brother, till they were able to return to Lothian, and drive out the Britons. After this they flouriſhed here; and were governed by kings of their own. There ſtill remains a place called *Cunningſgar*, the dwelling place of the miniſter of Sandwick, whoſe name and form beſpeak it the reſidence of ſome of them. But no traces of their hiſtory remain, except the name of *Belus*, in ancient characters, on a ſtone in the church of Birſa, where ſtill is to be ſeen one of the principal palaces. This government probably ſubſiſted till the ſubverſion of the Pictiſh kingdom in Scotland, A. D. 839, by Kenneth II. king of Scots. Of the whole, however, the time of the diſcovery and population of the Orkneys is certainly unknown. Probably it was very early; for we are told by Claudian, that they owe their name to the Greeks.

(5.) ORKNEY ISLANDS, HISTORY OF THE. As writing ſeems to have been long unknown in the northern iſlands, the chief part of our information reſpecting the ancient ſtate of the Orkneys muſt be derived from tradition. The beſt, and in all probability the moſt authentic account we have of this early part of the hiſtory of the Orkneys, is from Torfæus. See TORFÆUS. During the reign of Gregory the Great, when by his policy the Picts were driven from other parts of Scotland, they came to the Orcades, but did not meet with a favourable reception, for many of them migrated to Shetland, and thence to Norway. Theſe iſlands were at various times harraſſed and plundered by adventurers from Scandinavia; and the Norwegian princes often laid the inhabitants under tribute. The Chriſtian religion was tranſported to the Orkneys from Norway, in the beginning of the 11th century, when Sigurdia poſſeſſed the entire dominion of theſe iſles. About this time he married a daughter of Malcolm III. by whom he had a ſon named Torphinus, who ſucceeded him. He defeated Ronald, a grandſon of Sigurdis, who had lived in Norway, and who was eſteemed the rightful heir of the earldom of Orkney, after he had made a ſucceſsful deſcent. He eſtabliſhed ſalutary laws, and encouraged the arts of induſtry. Torphitus built a ſumptuous church in Byrſa, where the firſt biſhops of Orkney reſided, and to which he retired in the decline of his life, and was interred in it, on his death at an advanced age. He left two ſons, Paul and Erland, who amicably ſhared in the government of their father's extenſive domain. During this period, the northern counties are ſaid to have arrived at a very ſuperior degree of cultivation and improvement, which became equally conſpicuous in the richneſs of their lands and in the mildneſs of their diſpoſition. Their ſons, however, did not both inherit their father's virtues. Magnus, the ſon of Erland, was pious and peaceable; a great promoter of religion, and anxious in patroniſing the eſtabliſhments of Chriſtianity: but Hacon, the heir of Paul, was vehement, wild, and impatient of reſtraint. He ſaw how Magnus was revered, and envy drove him to revenge; for, by the moſt deliberate villany, he got Magnus into his power, and murdered him. The latter part of his life was ſpent in penance, and in improving his dominions. Magnus's ſingular piety, and his unfortunate death, were ſo well repreſented at Rome, that he was canonized. Haquin left two ſons, Paul the Silent, and Harold the Orator. Harold ſucceeded in Caithneſs, and the Orkneys were governed by Paul. Ronald, a deſcendant of St Magnus, an elegant and accompliſhed youth, appeared at the court of Norway, and was ſupported in a claim upon the Orkneys, as the heir of the canonized martyr. He ſent meſſengers to Paul, and offered to ſhare the government with him; but this propoſal was refuſed. By very artful manœuvres, however, Ronald obtained his purpoſe, and ſhared his ſovereignity with Harold, the heir of Paul. They lived amicably together, till Ronald was at laſt aſſaſſinated by a proud chieftain; and Harold poſſeſſed the unrivalled ſovereignity of the north for a long period. In 1196, he was able to bring 7000 men to the field, and a body of cavalry, againſt the army of William king of Scotland, but was defeated. In 1197, the Caithneſſians rebelled, headed by one Roderic, and Torphinus, ſon to Harold. The king met and defeated them near Inverneſs. Roderick was ſlain; and William, ſeizing on Harold in the extremity of Caithneſs, detained him till Torphinus ſurrendered himſelf as an hoſtage; but on ſome new treaſons of the father, the king cauſed the eyes of the unhappy youth to be put out; and had him emaſculated, of which he ſoon died in priſon. Harold died in the 73d year of his age; and with him ended the independent ſovereignty of the north of Scotland. The Norwegians ſeem to have been in poſſeſſion of theſe iſles as late as 1266; for then Magnus IV. king of Norway, being worſted in war with the Scots, yielded them to Alexander III. king of Scotland by treaty; and Haquin king of Norway confirmed the poſſeſſion of them to king Robert Bruce in 1312. Laſtly, in 1464, Chriſtian I. king of Norway and Denmark, when he gave his daughter in marriage to James III. king of Scotland, transferred all his right to them to his ſon-in-law and his ſucceſſors; to make which more binding, the Pope's confirmation was obtained. Magnus ſold them to Alexander for 4000 merks Sterling, and a yearly acknowledgment of 100 merks.

(6.) ORKNEY ISLANDS, INHABITANTS OF THE. The gentry of the Orkneys are civilized, polite, and hoſpitable; and live like thoſe of Scotland, from whom they are chiefly deſcended. They live comfortably, are remarkably courteous to ſtrangers, and drink a great quantity of wine, with which their cellars are generally well ſtored. Indeed the inhabitants may be now juſtly deemed a Scotch colony. They ſpeak the language, profeſs the religion, follow the faſhions, and are ſub-

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ject to the laws of that people. They are frugal, sagacious, circumspect, religious, and hospitable. Their mariners are remarkably bold, active, dexterous, and hardy. Many surprising instances of longevity occur here, as well as in Shetland, of persons living to the age of 140. The Orkney women are generally handsome and well shaped, and bring forth children at a very advanced age.

(7.) ORKNEY ISLANDS, NATURAL CURIOSITIES OF THE. We may reckon among the curiosities of the Orkneys, the PHASEOLI, *Molucca beans*, or *Orkney beans*. They are found on the shore of the Orkneys, being thrown on them by storms of westerly wind. They are of several species, but none of them are the produce of these islands, but are probably of American origin, many of them being natives of Jamaica, and other islands of the Indies. They are found principally on those coasts which are most exposed to the waves of the Atlantic, and are on these so plentiful, that they might be gathered in large quantities, if of any value; but the only use they are put to, is the making of snuff-boxes. Sir Robert Sibbald and Mr Wallace, in their accounts of Scotland, have both named them *Molucca* BEANS. Many strange fishes and curious shells are also often cast up by the ocean; of these last a vast variety are preserved in the cabinets of naturalists. Sometimes exotic fowls are driven upon the Orkneys by tempestuous weather: fish, as large as whitings, have been thrown ashore to a considerable distance within the land. At Cantick-head, in the island Waes, and some other places, huge stones are often heaved up by the violence of the sea and wind, and cast over high rocks upon the land. A Laplander has been seen more than once on this coast, in his slender canoe, covered with skins, driven hither by adverse winds and storms. In the isle of Hoy, besides other curiosities, (See HOY, N° 2.) there is a very high and steep mountain, called the *Wart Hill of Hoy*, near the top of which, in May, June, and July, something at noon-day is seen to shine and sparkle with remarkable lustre, supposed by the natives to be an inchanted carbuncle: many persons have clambered up the hill in quest of it, but found nothing. Perhaps this splendour is produced by the reflection of the sun on a small stream of water sliding over the face of a smooth rock.

(8.) ORKNEY ISLANDS, NUMBER AND NAMES OF THE PRINCIPAL. They are about 30 in number; but many of them are uninhabited, the greater part being small, and producing only pasturage for cattle. The principal islands are MAINLAND, or POMONA, N. and S. RONALDSHAY, SWINNA, FLOTTA, COPINSHAY, STRONSAY, SANDAY, HOY, EDAY, WESTRAY, SHAPINSHAY, EGLISHAY, WEIR, GRÆMSAY, PAPA, ROUSAY, BURRAY, &c.; the terminations in *ay*, or *hay*, being generally given in the Teutonic to such places as are surrounded by water. The currents and tides flowing between the islands are extremely rapid and dangerous. Near *Swinna* are two great whirlpools, called the *wells of Swinna*, which are counted dangerous by mariners, especially in a calm. When sailors find themselves sucked into the vortex, they throw out a barrel, or some bulky substance, which smooths the water till it is sucked down and thrown up at a considerable distance, during which time the ship passes over in safety. But when there is a breeze of wind, these whirlpools may be crossed without danger.

(9.) ORKNEYS, POPULATION, PARISHES, CHURCHES, &c. OF THE. The total population of the Orkneys, as stated in Sir John Sinclair's *Statistical Account of Scotland*, in 1790-98 was 23,053: the decrease since 1755, was 2015. The number of parishes is 27, which contain 31 churches, and above 100 chapels.

(10.) ORKNEYS, PROPOSED IMPROVEMENTS IN THE. Campbell, in his *Political Survey*, suggests two improvements in the Orkneys: 1. The erecting an university; of which he recapitulates the probable advantages, arising from their central situation; and, 2. Allowing the East India company to erect a spacious magazine in one of these islands; where also a collector, and a sufficient number of king's officers, should reside, to receive the duties of such East India commodities as might be taken off by British subjects. These he proposes for the Orkneys in particular, and in addition to improvements proposed for the whole islands in general. We are told that the Orkneys are equal in extent to the county of Huntingdon.

(11.) ORKNEYS, QUADRUPEDS, BIRDS, AND FISH OF THE. There are upwards of 50,000 sheep in these islands. Besides great numbers of little horses, black cattle, swine, and rabbits, the inhabitants rear all sorts of domestic animals and tame poultry. Their heaths and commons abound with red deer, and all sorts of game; partridges, grouse, heath-cocks, plovers, ducks, teals, and widgeons; the sea-coast teems with seals and otters; and are visited by whales, cod, ling, tusk, herrings, and all sorts of fish: on the shore they find spermaceti, os sepiæ, and great variety of shells and corallines, with multitudes of oysters, remarkably large muscles, crabs, and cockles. The rocks are covered with sea fowls, wild geese, solan geese, barnacles, eagles, hawks, and kites. The Orkney eagles are so strong that they have been known to carry away young children in their talons. They make such havock among the lambs, that he who kills an eagle is entitled by law to a hen from every house in the parish where it was killed. The king's falconer visits these islands every year, to fetch away the young hawks and falcons from their nests among the precipices; he enjoys a yearly salary of 20l. and may claim a hen or a dog from every house in the county, except some that are expressly exempted.

(12.) ORKNEYS, RELICS OF ANTIQUITY IN THE. At Stennis, in the Mainland, there is a causeway of stones over a lake, at the S. end of which is a circle of stones about 20 feet above ground, each 6 feet broad, and from one to two feet thick: between this circle and the causeway, two stones of the same dimensions stand by themselves, and one of them is perforated in the middle. At half a mile from the other end of the causeway appears a larger circle of the same kind of stones, the diameter of which may amount to 110 paces; some of these stones are fallen; and

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to

to the E. and W. of the larger circle are two artificial green mounts. Both are surrounded with a ditch; and one cannot view them without admiration, considering the art that must have been used to bring such unwieldy masses together in this order. They were probably temples and places of sacrifice in times of pagan superstition; and seem to bear a great affinity with the celebrated monument called STONEHENGE, in England. In one of the mounts, at the N. end of the causeway, the natives found nine *fibulæ*, or clasps of silver, formed into a circle, and resembling a horse shoe. In many different places of the Orkneys are rude obelisks or single stones of a great height, set up either as memorials of battles, treaties, or remarkable personages. In Rousay, between two high mountains, there is a place which the natives distinguish by the appellation of the *camp of Jupiter Fring*: but the reason of this name is not known. At the W. end of Mainland, near Skeal, is a surprising causeway, above a quarter of a mile in length, on the summit of high hills, composed of reddish stones of different magnitudes, impressed with various figures both on the upper and under surface. Some gentlemen in the neighbourhood have carried off the most beautiful of these stones, to be set in their chimneys by way of ornament, like the painted tiles of Holland. This country has many sepulchres of different nations. In the plains of Skeal, the sand being blown away from the surface of the ground, several square catacombs appear built of stones well cemented together, containing some parcels of black earth, and each secured by a large stone at the mouth. Sepulchres of the same kind are found at Rousum in Stromsay; which is likewise remarkable for a different kind of monument, consisting of one entire stone cylinder hollowed, with a bottom like that of a barrel, and a round stone to fill up the entrance: above, the stone was sharpened into an edge; within were found some burned bones and red clay; and over it was placed a large flat stone for the preservation of the whole. These were probably Roman catacombs. In Westray, divers Danish graves have been discovered: in one of these was the skeleton of a man, with a sword on one side, and a Danish axe on the other. Some have been found buried with dogs, combs, knives, and other utensils. In many places there are round hillocks or barrows, called *lughs*, signifying, in the Teutonic language, burying places, supposed to have been the cemeteries of the ancient Saxons. In different parts of these islands are the remains of great buildings, believed to have been fortresses erected by the Danes or Norwegians when they possessed the country. One of these in the isle of Wyre, called the *castle of Coppi-rous*, signifying a town of security, is surrounded by a fosse, and the first floor still remains above ground, a perfect square of stone wall, very thick, strongly built, and cemented with lime, the area within not exceeding ten feet in length. In the chapel of Clet, in the isle of Sanday, there is a grave 19 feet long, in which was found part of a man's back bone, larger than that of a horse. Human bones, of nearly the same size, have been dug up in Westray; and indeed this country is remarkable for producing men of a gigantic stature. In the ancient fabric of Ladykirk, in S. Ronalshay, there is a stone four feet long and two feet broad, on which the print of two feet are engraven, supposed to be the place where, in times of popery, penitents stood to do public penance. The cathedral of Kirkwall is a fine building. See KIRKWALL, N° 2.

(13.) ORKNEYS, STEWARTRY, GOVERNMENT, &c. OF THE. The isles of Orkney and Shetland compose one stewartry, or county, and send one member to the British parliament. The right of superiority to the Orkneys was dismembered from the crown by the union parliament, and granted for a certain yearly consideration to the earl of Morton, by Queen Anne, who appointed him hereditary steward and justiciary. It is now in the possession of Lord Dundas, who has the power of creating certain judges, called *bailies*. There is one of these established in every island and parish, with power to superintend the manners of the inhabitants, to hold courts, and determine civil causes, according to the laws of Scotland, to the value of 10l. Scots money, or 16s. 8d. Sterling, but all contests of higher import are referred to the decision of the steward or his deputy, who resides at Kirkwall, which is the seat of justice. Subservient to the bailies, are 6 or 7 of the most reputable inhabitants, who oversee the conduct of their fellows, acting as constables, and make report of all enormities to the bailie; who causes the delinquent to be apprehended and punished, if the crime be within the extent of his judicial power; otherwise he transmits him to Kirkwall, where he is tried by the steward. The Protestant religion prevails in the isles of Orkney, according to the rites and discipline of the kirk; these, and the isles of Shetland, constituting one presbytery, which assembles at Kirkwall.

(14.) ORKNEYS, TENURES, CUSTOMS, AND MANNER OF LIVING IN THE. Some particular lands are held by a tenure called *Udal Right*, from Ulcius, or Olaus, king of Norway, who formed the lands, on condition of receiving one 3d of the produce; and this right devolved in succession, without any charter granted by the sovereign. The inhabitants, instead of measuring their corn, weigh it in pismores or punders. Their least denomination is a mark, consisting of 18 ounces, and 24 marks make a lispound, which is a Danish quantity. The poorer sort of people appear very meanly habited, with a piece of seal-skin instead of shoes; and, living chiefly on salt fish, are subject to the scurvy. They are much addicted to superstitious rites; in particular, interpreting dreams and omens, and believing in the force of idle charms. The natives are inured to fatigue, and remarkably adventurous, both in fishing during rough weather, and in climbing the rocks for the fleth, eggs, and down of sea-fowl. Formerly, while they were exposed to the invasions of the Norwegians, or western islanders, every village was obliged to equip a large boat well manned; and all the sensible men appeared in arms, when the alarm was given by the beacons lighted on the tops of the rocks and highest mountains. These beacons, known by the name of *ward-hills*, are

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are ſtill to be ſeen in every iſland. Their corn land they incloſe with mud or ſtone walls, to preſerve it from the ravages of their ſheep, ſwine, and cattle, which wander about at random, without being attended by herdſmen: their ordinary manure, eſpecially near the ſea-coaſt, is ſea-weed, which they carefully gather, and divide into equal portions. Their ſheep are marked on the ears and noſe; but ſo wild, that when they ſhear them in May, they are obliged to hunt every individual, with dogs trained for that purpoſe. Their manner of catching ſea-fowl is curious and particular. Under the rock where theſe fowls build, they row their boat, provided with a large net, to the upper corners of which are faſtened two ropes, lowered down from the top of the mountain by men placed in that ſtation. Theſe hoiſting up the net, until it ſpread oppoſite to the cliffs in which the fowls are ſitting, the boatmen below make a noiſe with a rattle, by which the fowls being frightened, fly forwards into the boſom of the net, in which they are immediately encloſed and lowered down into the boat; others practiſe the method uſed in Iceland and Norway, and are lowered down by a ſingle rope from the ſummit of the mountain; this is the conſtant way of robbing the hawk's neſt. See BIRD-CATCHING.

(15.) ORKNEYS, TRADE AND MANUFACTURES OF THE. The trade of the Orkneys is not very conſiderable, though it might be extended to great advantage. They ſupply with freſh proviſions, for ready money, the ſhips and veſſels that touch upon the coaſt in the courſe of northern voyages, or in their paſſage from the Eaſt Indies, when they go north about Ireland and Scotland, in time of war, to avoid the privateers of the enemy. They are alſo viſited by thoſe engaged in the herring-fiſhery, though there is not ſuch a reſort on this account to theſe iſlands as to the iſles of Shetland. Nevertheleſs, a good number of boats from the weſtern parts of Scotland, as well as from Londonderry, Belfaſt, and other parts of Ireland, fiſh for herring as far north as the Leuze, and ſupply the Orkneys with tobacco, wine, brandy, and other ſpirituous liquors, cloths, and divers manufactures. Theſe they exchange for fiſh, and oil extracted from porpoiſes, ſeals, and other ſea-animals. The people export annually great numbers of black cattle, ſwine, and ſheep; together with large quantities of corn, butter, tallow, ſalt, and ſtuffs made in the country, over and above the ſkins of ſeals, otters, lambs, and rabbits, down, feathers, writing quills, hams, and wool; yet all theſe articles would, in point of profit, fall infinitely ſhort of their herring fiſhery, were it proſecuted with induſtry, economy, and vigour. As there are no merchants in the Orkneys who export fiſh on their own account, what herrings are taken, they ſell to the Dutch or Scotch dealers in and about Invernefs. They generally fiſh for herring on the W. ſide of the Orkneys; and are therefore more remote from markets than thoſe who are employed in the ſame manner on the coaſt of Shetland. In the Orkney iſlands they ſee to read at midnight in June and July; and during four of the ſummer months, they have frequent communications, both for buſineſs and curioſity, with each other, and with the continent: the reſt of the year, however, they are almoſt inacceſſible, through fogs, darkneſs, and ſtorms. The chief manufacture carried on in theſe iſlands is that of KELP, which indeed may be reckoned their ſtaple commodity, ſince 1722, when it was firſt introduced by Mr James Fea of Whitehall. From that period to 1794, the quantity manufactured amounted to 291,976l. Sterling, which is above 36 years purchaſe of the whole iſlands, the groſs rent of which is only about 8000l. a-year.

ORLA, a river of Germany, in Upper Saxony, which joins the Saal, at ORLAMUNDA.

ORLAMUNDA, a town of Thuringia, in Altenburg, at the conflux of the Orla and Saal, 40 miles SW. of Altenburg, 50 of Leipſic, and 24 ESE. of Erfurt. Lon. 11. 24. E. Lat. 50. 53. N.

ORLANDO, a cape on the N. coaſt of Sicily, 15 miles W. of Patti.

(1.) ORLE, ORLET, or ORLO, in architecture, a fillet under the ovolo, or quarter round of a capital. When it is at the top or bottom of a ſhaft, it is called *cincture*. Palladio uſes the word *orlo* for the plenith of the baſis of the columns.

(2.) ORLE, in heraldry. See HERALDRY, *Chap.* III. *Sect.* II.

ORLEANNOIS, or ORLEANOIS, a ci-devant province of France, which included the ſeveral diſtricts of Orleannois Proper, Beauce Proper, or Chartrain, Dunois, Vendomois, Blaiſois, the greateſt part of Gatinois, and Perche-Gouet. The principal rivers are the Loire, Loiret, Cher, La Conie, Aigle, Hyere, Yonne, and Eyre; which render the country very fertile. There are alſo ſome remarkable canals, particularly thoſe of Briare and Orleans. The Loire, and the canals drawn from thence, greatly facilitate and promote the inland trade of the republic. It was called in Latin *Aurelianenſis Ager*, and was bounded on the E. by the Gatinois, S. by Sologne, W. by Dunois and Vendomois, and N. by Beauce. The Loire divided it into Upper and Lower; the former lying N. and the latter S. of that river. It yields plenty of grain, wine, wood, fruit, and abounds in cattle, game, and fiſh. It is now divided into the three departments of the Loire and Cher, the Loiret, and the Eure and Loire.

(1.) ORLEANS, a city of France, capital of the dep. of the Loiret, and late capital of the ORLEANOIS. It was anciently called *Genabum*, or *Cenabum*; and afterwards AURELIA, *Aurelia*, and AURELIANUM, by the emperor Aurelian, who conſiderably enlarged it. In Julius Cæſar's time it was the capital of the Carnutes. It ſtands about 60 miles S. of Paris, on the N. bank of the Loire; acroſs which there is an elegant bridge of 9 arches, the entrance by which is exceedingly noble and ſtriking, the ſtreet which leads from it being compoſed of moſt elegant modern buildings. In general, however, excepting this ſtreet, it is very meanly built, and the ſtreets narrow. It is ſurrounded with walls, and fortified with 40 towers. The ſtreets almoſt all terminate at the quays. It is a place of conſiderable magnitude; and, before the revolution, had ſeveral inferior courts of juſtice, and an univerſity. It was alſo a biſhop's ſee; and the cathedral is a moſt ſuperb Gothic

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Gothic ſtructure, and had the fineſt ſteeple in France till it was damaged in the time of the civil wars. There were 22 pariſhes in it, and a great number of churches and religious houſes. There is alſo a public walk, planted with ſeveral rows of trees; and there were ſugar bakers; a manufacture of ſtockings and ſheep ſkins; a theological ſeminary; a great trade in brandy, wine, ſpices, and ſeveral manufactures, which, with other commodities, were conveyed to Paris by the Loire and the canal. (See N° 8.) The environs of Orleans, to the S. of the Loire, are very agreeable. It is in general a level country, covered with corn and vines. Lewis XIV. gave the dukedom to his brother Philip, who began and finiſhed the canal; which, by the duties paid by veſſels going up and down, brought in, one year with another, 150,000 livres. The biſhop was ſuffragan to the archbiſhop of Paris, and had a revenue of 24,000 livres, out of which his tax to Rome was 2000 florins. A new biſhop, on the firſt day of his entering, had the privilege of releaſing all the priſoners in it, except thoſe committed for treaſon. The bridge was new built in the 18th century, and opened in 1760; and the French eſteem it the fineſt in the world. Orleans lies 30 miles NE. of Blois, and 60 SSW. of Paris. Lon. 1. 59. E. Lat. 47. 54. N.

(2, 3.) ORLEANS, an iſland and town of Canada, in the river St Lawrence, E. of QUEBEC. Lon. 69. 50. W. Lat. 47. 0. N.

(4.) ORLEANS, a townſhip of Maſſachuſetts, in Barnſtable county.

(5.) ORLEANS, a county of Vermont, containing 23 townſhips. A part of Lake Memphremagog projects into the N. part of it, from Canada.

(6.) ORLEANS, Peter Joſeph, a French Jeſuit, born at Bourges in 1641. He taught the belles lettres for ſome time in his ſociety, but afterwards devoted himſelf to hiſtory. He wrote A Hiſtory of the Revolutions of Spain; A Hiſtory of Two conquering Tartars, Chunchi and Camhi; The Life of Father Coton; and a Hiſtory of the Revolutions in England, under the Stuarts, from 1603 to 1690. He died in 1698.

(7.) ORLEANS, Philip, the laſt duke of. See EGALITE.

(8.) ORLEANS, CANAL OF, a celebrated canal of France, which commences from the Loire, 6 miles above ORLEANS (N° 1.), croſſes the foreſt of Orleans (N° 9.), joins the Loing near Montargis, and, paſſing Nemours, runs into the Seine. It was finiſhed in 1682, and has 30 locks in its courſe, which is 54 miles long. See CANAL, § 6.

(9.) ORLEANS, FOREST OF, an extenſive foreſt of France near the city (N° 1.), containing 100,000 acres, planted with oaks and other trees. Before the revolution it belonged to the Duke of Orleans, who drew for its timber annually about 100,000 livres.

(10.) ORLEANS, MAID OF. (See JOAN, N° 4.) In the ſtreet of Orleans, leading from the bridge, ſtands the celebrated monument where Charles VII. and Joan of Arc, the Maid of Orleans, are repreſented on their knees before the body of our Saviour, who lies extended on the lap of the Virgin. It was erected by order of that monarch in 1458, to perpetuate his victories over the Engliſh, and their expulſion from his dominions. All the figures are in iron. That of the Maid is remarkably beautiful; heroic, yet mild. The king appears bareheaded, and by him lies his helmet ſurmounted with a crown. Oppoſite to him is the Maid herſelf in the ſame attitude of grateful devotion to Heaven. It is a moſt precious and invaluable hiſtorical monument. In the Hotel de Ville is a portrait of the ſame immortal woman, which is the oldeſt and beſt picture of her now exiſting.

(11.) ORLEANS, NEW, a city, *now* belonging to the United States of N. America, the capital of LOUISIANA, lately ſold to them by Bonaparte. It was built by the French, during the regency of the Duke of Orleans. On the 19th March 1788 ſeven 8ths of it were burnt. It is ſeated on the E. Bank of the Miſſiſippi, 105 miles from its mouth, according to Dr Brookes, but according to Mr Cruttwell, only 18 leagues. Lon. 90. 1. W. Lat. 29. 58. N.

(12.) ORLEANS, OLD FORT, a fort of Louiſiana, on the W. bank of the Miſſouri.

ORLENGA, a town of Ruſſia, in Irkutſk.

ORLET. See ORLE, N° 1.

ORLIAC, a town of Croatia, 20 m. S. of Sluin.

ORLO. See ORLE, N° 1.

* (1.) ORLOP. *n. ſ.* [*overloop*, Dutch.] The middle deck. *Skinner.*—A ſmall ſhip of the king's called the Penſie, was aſſailed by the Lyon, a principal ſhip of Scotland; wherein the Penſie ſo applied her ſhot, that the Lyon's *orlop* was broken, her ſails and tackling torn; and laſtly ſhe was boarded and taken. *Hayward.*

(2.) ORLOP, in the ſea language, is the *uppermoſt* deck in a great ſhip, reaching from the main to the mizen maſt. In three-decked ſhips the ſecond and loweſt decks are ſometimes called *orlops*.

(1.) ORLOV, a town of Ruſſia, in Viatka.

(2.) ORLOV, a river of Ruſſia, which runs into the Tchernaia; in Lon. 186. E. of Ferro. Lat. 65. 20. N.

(3.) ORLOV, an iſland in the Caſpian Sea.

ORLOVCA, two rivers of Ruſſia: 1. In Archangel, running into the Frozen Ocean, 28 miles N. of Ponoi: 2. Running into the Irtiſch, in Lon. 93. 10. E. of Ferro. Lat. 53. 50. N.

ORLOVOGORODITSCHE, a town of Ruſſia, on the Iſchim, 120 miles SE. of Tobolſk.

ORLOVSKOE, a province, of Ruſſia, bounded on the N. by thoſe of Smolenſk and Kaluga; E. by Tambouſkoe and Tulſkoe; SE. by Kurſkoi and Voronetſkoi, and W. by Smolenſk, and Novogorod Sieverſkoi. It is 208 miles long, and from 20 to 100 broad.

ORLUCE, a town of Poland, in Sandomirz.

(1.) ORLY, a town of France, in the dep. of Paris, 7½ miles SSE. of Paris.

(2.) ORLY, a town of Lithuania, in Brzeſk.

(3.) ORLY, a town of Poland, in Sandomirz.

ORMEA, a town of France, in the department of the Tanaro, and ci-devant county of Aſti, in the late duchy of Montferrat. It was taken by the French in April 1792, and lies ſix miles WSW. of Garreſio, and 10 S. of Ceva.

ORMES, a town of France, in the department of Indre and Loire, 10 miles S. of Richelieu.

ORMES HEAD, GREAT and LITTLE, two capes of

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of N. Wales, in Caernarvonſhire, fives miles diſtant from each other. Lon. 2. 5. Lat. 53. 24. N.

(1.) ORMISTOUN, a pariſh of Scotland, in E. Lothian, of an irregular form, five miles long, and from three to half a mile broad. The air is dry and healthy, the ſurface level, the ſoil wet and late, but the paſtures are rich, and the cattle excellent; clover and graſſes are therefore much cultivated, and incloſures prevail. Some of the cows give 20 Scots pints of milk per day. Limeſtone abounds. The population in 1791 was 864; increaſe 54 ſince 1755. On the top of a hill called *Doddridge Law* are relics of a Daniſh camp.

(2.) ORMISTOUN, a village in the above pariſh, containing about 550 inhabitants in 1791; with a ſtarch work and two diſtilleries. It has a fair on the 1ſt Tueſday in July. Near this village is *Ormiſtoun Hall*, the ſeat of the E. of Hopetoun, in whoſe garden is a yew tree, 25 feet long, and 11 in circumference; whoſe branches extend over 53 feet of ground.

ORMOND, the northern diviſion of the county of Tipperary, in the province of Munſter, in Ireland.

ORMOZD, or OROMAZDES, the ſupreme deity of the ancient Perſians. See ARIMANIUS, MYSTERIES, § 14, 17; and POLYTHEISM.

ORMSIDE, a town of England, near Appleby, in Weſtmoreland, with a church and pariſh, but ſmall. A great number of veſſels of braſs, ſome of which ſeemed to have been gilt, were diſcovered near the manor houſe, by the water waſhing away the ſoil. The manor-houſe is built like a caſtle.

(1.) ORMSKIRK, in Lancaſhire, in England, is a handſome town, with a good inland trade. By the inland navigation, it has communication with the Merſey and its extenſive windings. (See MERSEY.) There is a bituminous earth about this place, from which oil of amber is extracted that preſerves raw fleſh, and ſerves the poor people inſtead of candles. The only remarkable monuments are thoſe of the ancient family of the Stanleys before they were ennobled. Near it is Latham houſe; to which belongs a large eſtate, and a fine park. It was gallantly defended in the civil wars by lady Charlotte, counteſs of Derby, who gloriouſly held it to the laſt extremity againſt the parliament's forces, till ſhe was relieved by Prince Rupert. It was, however, ruined in a ſecond ſiege, and ſold by the family to the late Sir Thomas Bootle, who built a very magnificent houſe upon it.

(2.) ORMSKIRK MEDICINE. See MEDICINE, *Index*.

ORMUS, a ſmall iſland of Aſia, at the bottom of the gulph of the ſame name, at the entrance of the Gulph of Perſia. It is about 6 miles from the main land, and 18 in circuit. It yields plenty of fine white ſalt; alſo a kind of ſhining black ſand, which is uſed for duſting writings, and is tranſported in conſiderable quantities to Europe. The coaſt affords excellent oyſters. There is neither ſweet water nor graſs upon it, the ſoil being of a ſalt ſulphureous nature. It was taken by the Portugueſe in 1507, who fortified it; and it was afterwards frequented by a vaſt number of rich merchants. In 1622 the Perſians, by the aſſiſtance of the Engliſh, conquered this place, and demoliſhed the houſes, which were 4000 in number, containing 40,000 inhabitants. Some time after the Perſians rebuilt the fort, and placed a garriſon in it, but they could never bring it to be a place of trade as before; however, it is the key of the Perſian Gulph, from its importance and the commodiouſneſs of the harbour. It is now almoſt deſerted, and produces nothing but ſalt, which ſometimes is two inches deep upon the ſurface of the earth. Lon. 56. 25. E. Lat. 27. 20. N.

ORMUZD. See OROMOZD.

ORMYAH, a town of Perſia, in Adirbeitzan, 120 miles SW. of Tauris.

ORNACIEUX, a town of France, in the dep. of the Iſere; 15 miles E. of Vienne.

ORNAIN, a river of France, which runs into the Marne, near Vitry le François.

* ORNAMENT. *n. ſ.* [*ornamentum*, Lat. *ornament*, Fr.] 1. Embelliſhment; decoration.—

The world is ſtill deceiv'd with *ornament*.
Shak.

2. Something that embelliſhes.—Ivorie, wrought in *ornaments* to decke the cheeks of horſe. *Chapman.*

The Tuſcan chief to me has ſent
Their crown and every regal *ornament*.
Dryden.

—His virtues or vices will render him, in ſome degree, an *ornament* or diſgrace to his profeſſion. *Rogers.* 3. Honour; that which confers dignity. —They are abuſed and injured, whenever they are taught that any thing is an *ornament* in them that is not an *ornament* in the wiſeſt amongſt mankind. *Law.*—The perſons of different qualities in both ſexes are allowed their different *ornaments*. *Addiſon on Italy.*

* ORNAMENTAL. *adj.* [from *ornament*.] Serving to decoration; giving embelliſhment.—Some think it moſt *ornamental* to wear their bracelets on their wriſts. *Brown.*—If the kind be capable of more perfection, though rather in the *ornamental* parts of it than the eſſential, what rules of morality or reſpect have I broken? *Dryden.*—Even the Heathens have eſteemed this variety not only *ornamental* to the earth, but a proof of the wiſdom of the Creator. *Woodward's Nat. Hiſt.* —If no advancement of knowledge can be had from univerſities, the time there ſpent is loſt; every *ornamental* part of education is better taught elſewhere. *Swift on Religion.*

* ORNAMENTALLY. *adv.* [from *ornamental*.] In ſuch a manner as may confer embelliſhment.

* ORNAMENTED. *adj.* [from *ornament*.] Embelliſhed; bedecked.—This is, I think, a word of late introduction, not very elegant.

ORNANO, a town of France, in the department and iſland of Corſica, and diſtrict of Ajaccio; 10 miles SSE. of Ajaccio.

ORNANS, a town of France, in the dep. of Doubs, and ci-devant province of Franche Compte. Near it is a well, which, in great floods, overflows the adjacent country, and throws out fiſh called *Umbres*. It is ſeated on the Louve, eight miles SE. of Beſançon, and 14 NW. of Pontarlier. Lon. 23. 47. E. of Ferro. Lat. 47. 7. N.

* ORNATE. *adj.* [*ornatus*, Lat.] Bedecked; decorated; fine.—

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What thing of ſea or land,
Female of ſex it ſeems,
That ſo bedeck'd, *ornate* and gay,
Comes this way failing? *Milton's Agoniſtes.*

* ORNATENESS. *n. ſ.* [from *ornate.*] Finery; ſtate of being embelliſhed.

* ORNATURE. *n. ſ.* [*ornatus*, Latin.] Decoration. *Ainſ.*

(1.) ORNE, a department of France, comprehending part of the ci-devant provinces of Normandy and Perche. It is bounded on the N. by that of Calvados, NE. by that of Eure and Loire, S. by thoſe of Sarte and Maine; and W. by that of the Channel. It is about 70 miles long, and from 18 to 30 broad. ALENÇON is the capital.

(2.) ORNE, a river of France, which riſes about 3 miles from Seez, in the above department; which is named from it; paſſes by Seez, Argentan, Clecy, Caen, &c. and runs into the Engliſh Channel, 9 miles below Caen.

(3.) ORNE, a river of France, which runs into the Sarte, in the department of the Sarte.

ORNEA, an ancient town of Argolis, where a battle was fought between the Spartans and Argives. *Died.*

ORNEAU, a river of France, in the department of the Dyle, and ci-devant province of Auſtrian Brabant; which runs into the Sambre, ſix miles below Chatelet.

ORNES, a town of France, in the department of the Meuſe; ſix miles NNE. of Verdun, and ſeven NW. of Eſtain.

ORNICUS LAPIS, a name given by ſome authors to the ſapphire of the ancients, which is a peculiar ſpecies of our lapis lazuli, in which the gold-coloured matter is not diſpoſed in veins, but in ſeparate ſpots of the form of a ſtar. It was firſt called *orniſous* and *orinus*, by corruption from *auricus*, golden; and thence came at length the word *ornicus*.

* ORNISCOPIST. *n. ſ.* [ὄρνις and σκοπέω.] One who examines the flight of birds in order to foretel futurity.

ORNITHIÆ, a name given by the ancients to certain winds, which uſually blew in the ſpring, at the time when the birds of paſſage came over to them. Pliny ſays that theſe winds blew from the weſt, and that by ſome the Etefian winds were called by this name. Others ſuppoſe that they blew from the N. or NW.

ORNITHOGALUM, STAR OF BETHLEHEM; a genus of the monogynia order, belonging to the hexandria claſs of plants, and in the natural method ranking under the 10th order, *Coronariæ*. The corolla is hexapetalous, erect, perſiſting, and patent above the middle; the filaments dilated at the baſe. There are ſeven ſpecies, all herbaceous perennials, riſing from ſix inches to three feet high, having ſtalks terminated with long ſpikes of hexapetalous, ſtar-ſhaped, white, and yellow flowers. Six of theſe are very hardy, and will proſper in any ſituation but the ſeventh.

ORNITHOGALUM CAPENSE, a native of the Cape of Good Hope, requires the aſſiſtance of artificial warmth to preſerve it in this country. They are all eaſily propagated by offſets from the roots. The bulbous roots of all the ſpecies are nutritious and wholeſome.

ORNITHOLOGIST. *n. ſ.* A deſcriber of birds; one ſkilled in ornithology. *Aſh.*

ORNITHOLOGY.

DEFINITIONS.

* ORNITHOLOGY. *n. ſ.* [ὄρνις and λόγος]. A diſcourſe on birds.

ORNITHOLOGY is a branch of ZOOLOGY, or the ſcience which treats of birds, deſcribes their form, external and internal, and teaches their œconomy and their uſes.

A bird is an animal covered with feathers, furniſhed with a bill, having two wings, and only two legs, with the faculty, except in a very few inſtances, of removing itſelf from place to place through the air.—But before proceeding to analyze the characteriſtic parts of birds, it will be proper to premiſe an explanation of the terms uſed by naturaliſts in deſcribing them.

EXPLANATION *of* TECHNICAL TERMS *in* ORNITHOLOGY *uſed by* PENNANT *and* LINNÆUS.

Fig. 1. Plate CCLXIII. *Cere. Cera.* The naked ſkin that covers the baſe of the bill in the hawk kind.

2. *Capiſtrum.* A word uſed by Linnæus, to expreſs the ſhort feathers on the forehead juſt above the bill. In crows theſe fall forewards over the noſtrils.

3. *Lorum.* The ſpace between the bill and the eye, generally covered with feathers; but in ſome birds naked, as in the black and white grebe,

4. *Orbits. Orbita.* The ſkin that ſurrounds the eye, which is generally bare; particularly in the heron and parrot.

5. *Emarginatum.* A bill is called *roſtrum emarginatum* when there is a ſmall notch near the end. This is conſpicuous in that of butcher-birds and thruſhes.

6. *Vibriſſæ. Vibriſſæ pectinatæ.* Stiff hairs that grow on each ſide of the mouth, formed like a double comb, to be ſeen in the goatſucker, flycatcher, &c.

7. *Baſtard wing. Alula ſpuria.* A ſmall joint riſing at the end of the middle part of the wing, or the *cubitus*; on which are three or five feathers.

8. *Leſſer coverts of the wings. Tectrices primæ.* The ſmall feathers that lie in ſeveral rows on the bones of the wings. The under coverts are thoſe that line the inſide of the wings.

9. *Greater coverts. Tectrices ſecundæ.* The feathers that lie immediately over the quill feathers and ſecondary feathers.

10. *Quill-feathers. Primores.* The largeſt feathers of the wings, or thoſe that riſe from the firſt bone.

11. *Secondary feathers. Secundariæ.* Thoſe that riſe from the ſecond.

12. *Coverts of the tail. Uropygium.* Thoſe that cover the baſe of the tail.

13. *Vent feathers.* Thoſe that lie from the vent to the tail. *Criſſum Linnæi.*

14. *The*

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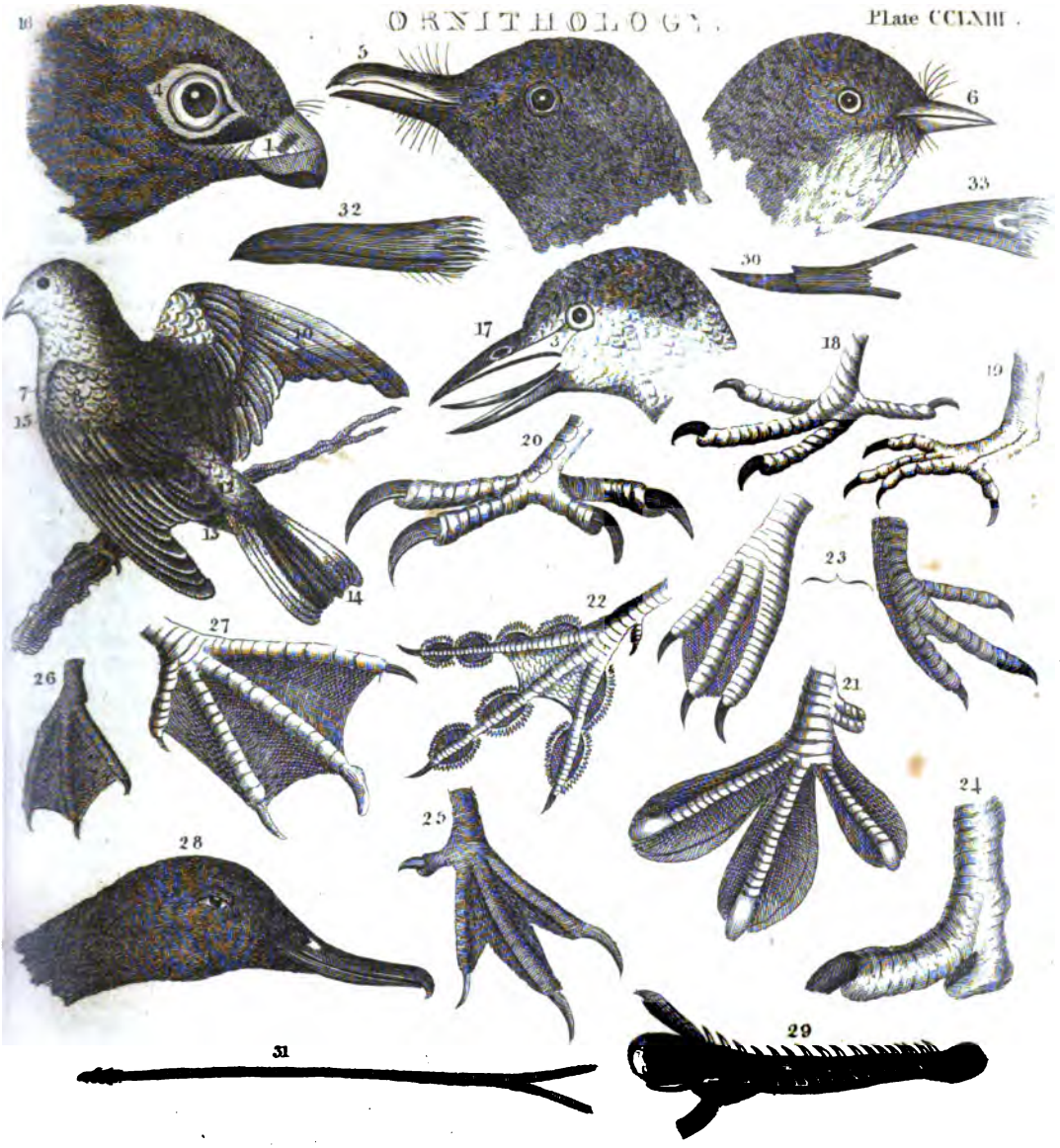

Birds of Paradise.

Palamedea or the horned Screamer.

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14. *The tail. Rectrices.*
15. *Scapular feathers.* That rife from the ſhoulders, and cover the ſides of the back.
16. *Nucha.* The hind part of the head.
17. *Roſtrum ſubulatum.* A term Linnæus uſes for a ſtraight and ſlender bill.
18. *Pes ambulatoris.* All the toes divided to the bottom.
19. *Pes graſſorius.* The outer toe more or leſs united to the middle one, particularly conſpicuous in the feet of the kingfiſher.
20. *Pes ſcanſorius.* The foot of the woodpecker forming for climbing. Climbing feet.
21. *Finned foot. Pes cobatus.* Such as thoſe of the grebes.
22. *Scolloped foot. Pes pinnatus.* The webs indented in the ſides, as in the coots and ſcolloped-toed ſandpipers.
23. *Pes tridactylus, vel curſorius.* Such as want the back toe.
24. *Pes didactylus.* In which the foot is compoſed of two toes, obſerved only in the oſtrich.
25. *Semipalmated. Pes ſemipalmatus.* When the webs reach only half way of the toes.
26. *Ungue poſtico ſeſſili.* When the hind claw adheres to the leg without any toe, as in the petrels.
27. *Digitis 4 omnibus palmatis.* All the four toes connected by webs, as in the corvorants.
Roſtrum cultratum. When the edges of the bill are very ſharp, ſuch as in that of the crow.
28. *Unguiculatum.* A bill with a nail at the end, as in thoſe of the gooſanders and ducks.
29. *Lingua ciliata.* When the tongue is edged with fine briſtles, as in ducks.
30. *Integra.* When plain or even.
31. *Lumbriciformis.* When the tongue is long, round, and ſlender like a worm, as that of the woodpecker.
Pedes compedes. When the legs are placed ſo far behind as to make the bird walk with difficulty, or as if in fetters; as is the caſe with the auks, grebes, and divers.
32. *Nares Lineares.* When the noſtrils are very narrow, as in ſea-gulls.
33. *Emarginatæ.* With a rim round the noſtrils, as in the ſtave.

SECT. I. EXTERNAL PARTS *of* BIRDS.

A BIRD may be divided into *head*, *body*, and *limbs*.

I. HEAD.

1. BILL (*roſtrum*) is a hard horny ſubſtance, conſiſting of an upper and under part, extending from the head, and anſwering to the mandibles in quadrupeds. Its edges generally plain and ſharp, like the edge of a knife, *cultrated*, as are the bills of crows; but ſometimes *ſerrated*, as in the toucan; or *jagged*, as in the gannet and ſome herons; or *pectinated*, as in the duck; or *denticulated*, as in the merganſers; but always deſtitute of real teeth immerſed in ſockets. The baſe in falcons is covered with a naked ſkin or cere (*cera*); in ſome birds with a carneous appendage, as the turkey; or a callous, as the curaſſo. In birds of prey, the bill is hooked at the end, and fit for tearing: in crows, ſtraight and ſtrong for picking: In waterfowls, either long and pointed for ſtriking, or ſlender and blunt for ſearching in the mire, or flat and broad for gobbling. Its other uſes are for building neſts; feeding the young; climbing, as in parrots; or, laſtly, as an inſtrument of defence or offence.

2. NOSTRILS, (*nares*,) the nice inſtruments of diſcerning their food, are placed either in the middle of the upper mandible, or near the baſe, or at the baſe, as in parrots; or behind the baſe, as in toucans and hornbills: but ſome birds, as the gannet, are deſtitute of noſtrils. The noſtrils are generally naked; but ſometimes covered with briſtles reflected over them, as in crows, or hid in the feathers, as in parrots, &c.

The fore part of the head is called the *front* (*ca-pitrum*); the ſummit (*vertex*), or the *crown*; the hind part, with the next joint of the neck (*nucha*), the *nape*; the ſpace between the bill and the eyes, which in herons, grebes, &c. is naked, (*lora*) the *ſtraps*; the ſpace beneath the eyes (*genæ*), the *cheeks*.

3. ORBITS (*orbitæ*), the eyelids; in ſome birds naked, in others covered with ſhort ſoft feathers. Birds have no eye-brows; but the grous kind have in lieu a ſcarlet naked ſkin above, which are called *ſupercilia*; the ſame word is alſo applied to any line of a different colour that paſſes from the bill over the eyes.

4. EARS. Birds are deſtitute of auricles or external ears, having an orifice for admiſſion of ſound; open in all but owls, whoſe ears are furniſhed with valves.

5. The CHIN, the ſpace between the parts of the lower mandible and the neck, is generally covered with feathers; but, in the cock and ſome others, has carneous appendages called *wattles* (*palearia*); in others, is naked, and furniſhed with a pouch, capable of great dilatation (*facculus*), as in the pelican and corvorants.

6. NECK (*collum*), the part that connects the head to the body, is longer in birds than in any other animals, and longer in ſuch as have long legs than in thoſe that have ſhort, either for gathering up their meat from the ground, or ſtriking their prey in the water; except in web-footed fowls, which are, by reverſing their bodies, deſtined to ſearch for food at the bottom of waters, as ſwans, and the like. Birds, eſpecially thoſe that have a long neck, have the power of retracting, bending, or ſtretching it out, in order to change their centre of gravity from their legs to their wings.

II. BODY.

1. Conſiſts of the BACK (*dorſum*), which is flat, ſtraight, and inclines; terminated by the

2. RUMP (*uropigium*), furniſhed with two glands, ſecreting a fattiſh liquor from an orifice each has, which the birds expreſs with their bills, to oil or anoint the diſcompoſed parts of their feathers. Theſe glands are particularly large in moſt web-footed water-fowls; but in the grebes, which want tails, they are ſmaller.

3. BREAST (*pectus*) is ridged and very muſcular, defended by a forked bone (*clavicula*), the merry-thought. The ſhort winged birds, ſuch as grous, &c. have their breaſts moſt fleſhy or muſcular; as they require greater powers in flying than the long-winged birds, ſuch as gulls and herons, which are ſpecifically lighter, and have greater extent of ſail.

4. BELLY

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4. Belly (*abdomen*) is covered with a ſtrong ſkin, and contains the entrails.

5. The Vent, or vent-feathers (*criſſum*), which lies between the thighs and the tail. The anus lies hid in thoſe feathers.

III. Limbs.

1. Wings, (*ale*), adapted for flight in all birds except the dodo, oſtriches, caſſowary, great auk, and the pinguins, whoſe wings are too ſhort for the uſe of flying; but in the dodo and oſtrich, when extended, ſerve to accelerate their motion in running; and in the pinguins, perform the office of fins in ſwimming or diving. The wings have near their end an appendage, covered with four or five feathers, called the *baſtard wing*, (*ala notha*), and *alula ſpuria*.

The leſſer coverts (*tectrices*) are the feathers which lie on the bones of the wings. The greater coverts are thoſe which lie beneath the former, and cover the quill-feathers and the ſecondaries.

The quill-feathers (*primores*) ſpring from the firſt bones (*digiti* and *metacarpi*) of the wings, and are 10 in number. Quill feathers are broader on their inner than their exterior ſides. The ſecondaries (*ſecondariæ*), are thoſe that riſe from the ſecond part (*cubitus*), and are about 18 in number, and equally broad on both ſides. The primary and ſecondary wing feathers are called *remiges*.

A tuft of feathers placed beyond the ſecondaries near the junction of the wings with the body. This in water fowls is generally longer than the ſecondaries, cuneiform, and may not unaptly be called the *tertials*.

The ſcapulars are a tuft of long feathers ariſing near the junction of the wings (*brachia*) with the body, and lie along the ſides of the back, but may be eaſily diſtinguiſhed, and raiſed with one's finger. The inner coverts are thoſe that clothe the under ſide of the wing.

The ſubaxillary are peculiar to the greater Paradiſe. The wings of ſome birds are inſtruments of offence. The anhima of Marcgrave has two ſtrong ſpines in the front of each wing. A ſpecies of plover, (Edw. *tab.* 47, and 280,) has a ſingle one in each; the whole tribe of jacana, and the gambo, or ſpur-winged gooſe of Mr Willoughby, the ſame.

2. The Tail is the director, or rudder, of birds in their flight; they riſe, ſink, or turn by its means; for when the head points one way, the tail inclines to the other ſide: it is, beſides, an equilibrium or counterpoiſe to the other parts; the uſe is very evident in the kite and ſwallows. The tail conſiſts of ſtrong feathers (*rectices*), 10 in number, as in the woodpeckers, &c.; 12 in the hawk tribe, and many others; in the gallinaceous, the merganſers, and the duck kind, of more. It is either even at the end, as in moſt birds, or forked, as in ſwallows; or cuneated, as in magpies, &c.; or rounded, as in the purple jackdaw of Cateſby. The grebe is deſtitute of a tail, the romp being covered with down; and that of the caſſowary with the feathers of the back. Immediately over the tail are certain feathers, that ſpring from the lower part of the back, and are called the *coverts of the tail* (*uropygium*.)

3. Thighs (*femora*) are covered entirely with feathers in all land birds, except the buſtards and the oſtriches; the lower part of thoſe of all waders, or cloven-footed water-fowls, are naked; that of all webbed-footed fowls the ſame, but in a leſs degree; in rapacious birds, are very muſcular.

4. Legs (*crura*); thoſe of rapacious fowls very ſtrong, furniſhed with large tendons, and fitted for tearing and a firm gripe. The legs of ſome of this genus are covered with feathers down to the toes, ſuch as the golden eagle; others to the very nails; but thoſe of moſt other birds are covered with ſcales, or with a ſkin divided into ſegments, or continuous. In ſome of the pies, and in all the paſſerine tribe, the ſkin is thin and membranous; in thoſe of web-footed water-fowls, ſtrong. The legs of moſt birds are placed near the centre of gravity: in land birds, or in waders that want the back toe, exactly ſo; for they want that appendage to keep them erect. Auks, greves, divers, and pinguins, have their legs placed quite behind, ſo are neceſſitated to ſit erect: their pace is awkward and difficult, walking like men in fetters: hence Linnæus ſtyles their feet *pedes compedes*. The legs of all cloven-footed water fowls are long, as they muſt wade in ſearch of food: of the palmated, ſhort, except thoſe of the flamingo, the avoſet, and the courier.

5. Feet (*pedes*), in all land birds that perch, have a large back toe; moſt of them have three toes forward, and one backward. Woodpeckers, parrots, and other birds that climb much, have two forward, two backward; but parrots have the power of bringing one of their hind toes forward while they are feeding themſelves. Owls have alſo the power of turning one of their fore toes backward. All the toes of the *ſwift* turn forwards, which is peculiar among land-birds; the tridactylous woodpecker is alſo anomalous, having only two toes forward, one backward; the oſtrich is another, having but two toes.

6. Toes, (*digiti*.) The toes of all waders are divided; but, between the exterior and middle toe, is generally a ſmall web, reaching as far as the firſt joint. The toes of birds that ſwim are either plain, as in the ſingle inſtance of the common water-hen or gallinule; or pinnated, as in the cootes and grebes; or entirely webbed or palmated, as in all other ſwimmers. All the plover tribe, or charadrii, want the back toe. In the ſwimmers the ſame want prevails among the albatroſſes and auks. No water fowls perch, except certain herons, the corvorant, and the ſhag.

7. Claws, (*ungues*.) Rapacious birds have very ſtrong, hooked, and ſharp claws, vultures excepted. Thoſe of all land birds that rooſt on trees have alſo hooked claws, to enable them to perch in ſafety while aſleep. The gallinaceous tribe have broad concave claws for ſcraping up the ground. Grebes have flat nails like the human.

Among water fowls, only the ſkua, *Br. Zool.* II. p. 529. N° 243. and the black-toed gull, *Br. Zool.* II. p. 532. N° 244. have ſtrong hooked or aquiline claws. All lands birds perch on trees, except the ſtruthious and ſome of the gallinaceous tribes. Parrots climb; woodpeckers creep up the bodies and boughs of trees; ſwallows cling. All water fowls reſt on the ground, except certain herons, and one ſpecies of ibis, the ſpoonbill, one or two ſpecies of ducks and of corvorants.

IV. Feathers.

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IV. FEATHERS.

FEATHERS are deſigned for two uſes; as coverings from the inclemency of the weather, and inſtruments of motion through the air. They are placed in ſuch a manner as to fall over one another *(tegulatim)*, ſo as to permit the wet to run off, and to exclude the cold; and thoſe on the body are placed in a quincuncial form; moſt apparent in the thick-ſkinned water fowls, particularly in the divers.

1. The parts of a feather are, the ſhafts; corneous, ſtrong, light, rounded, and hollow at the lower part; at the upper, convex above, concave beneath, and chiefly compoſed of a pith.

2. On each ſide the ſhafts are the vanes, broad on one ſide, narrow on the other; each vane conſiſts of a multitude of thin laminæ, ſtiff, and of the nature of a ſplit quill. Theſe laminæ are cloſely braced together by the elegant contrivance of a multitude of ſmall briſtles; thoſe on one ſide hooked, the other ſtraight, which lock into each other, and keep the vanes ſmooth, compact, and ſtrong. The vanes near the bottom of the ſhafts are ſoft, unconnected, and downy.

3. Feathers are of three kinds: (1.) Such as compoſe inſtruments of flight; as the pen-feathers, or thoſe which form the wings and tail, and have a large ſhaft: The vanes of the exterior ſide bending downward, of the interior upward, lying cloſe on each other, ſo that when ſpread, not a feather miſſes its impulſe on the air.

(2.) The feathers that cover the body, which may be properly called the *plumage*, have little ſhaft, and much vane; and never are exerted or relaxed, unleſs in anger, fright, or illneſs.

(3.) The DOWN *(plumæ)*, which is diſperſed over the whole body amidſt the plumage, is ſhort, ſoft, unconnected, conſiſts of lanuginous vanes, and is intended for excluding that air or water which may penetrate or eſcape through the former. This is particularly apparent in aquatic birds, and remarkably ſo in the anſerine tribe. There are exceptions to the forms of feathers. The vanes of the ſubaxillary feathers of the Paradiſe are unconnected, and the laminæ diſtant, looking like herring-bone. Thoſe of the tail of the oſtrich, and head of a ſpecies of curaſſo, curled. Thoſe of the caſſowary conſiſt of two ſhafts, ariſing from a common ſtem at the bottom; as do, at the approach of winter (after moulting), thoſe of the ptarmigans of arctic countries. The feathers of the pinguins, particularly thoſe of the wings, conſiſt chiefly of thin flat ſhafts, and more reſemble ſcales than feathers; thoſe of the tail, like ſplit whale-bone.

SECT. II. FLIGHT *of* BIRDS.

THE flight of birds is various; for, had all the ſame, none could elude that of rapacious birds. Thoſe which are much on wing, or flit from place to place, often owe their preſervation to that cauſe: thoſe in the water, to diving.

Kites, and many of the falcon tribe, glide ſmoothly through the air, with ſcarce any apparent motion of the wings. Moſt of the order of pies fly quick, with a frequent repetition of the motion of the wings. The Paradiſe floats on the air. Woodpeckers fly aukwardly, and by jerks, and have a propenſity to ſink in their progreſs.

The gallinaceous tribe, in general, fly very ſtrong and ſwiftly; but their courſe is ſeldom long, by reaſon of the weight of their bodies.

The columbine race is of ſingular ſwiftneſs; witneſs the flight of the carrier pigeon. See CARRIER, N° 3. The paſſerine fly with a quick repetition of ſtrokes; their flight, except in migration, is ſeldom diſtant. Among them, the ſwallow tribe is remarkably agile, their evolutions ſudden, and their continuance on wing long.

The ſtruthious race cannot fly; but ſtill, in running, their ſhort wings are of uſe, when erect, to collect the wind, and like ſails to accelerate their motion.

Many of the greater cloven-footed water-fowls or waders, have a ſlow and flagging flight; but moſt of the leſſer fly ſwiftly, and moſt of them with extended legs, to compenſate the ſhortneſs of their tails. Rails and gallinules fly with their legs hanging down. Coots and grebes with difficulty are forced from the water; but when they riſe, fly ſwiftly. Grebes and alſo divers fly with their hind parts downwards, by reaſon of the forwardneſs of their wings. Web-footed fowls are various in their flight. Several have a ſailing or flagging wing, ſuch as gulls. Pinguins, and a ſpecies of auk, are denied the power of flight. Wild geeſe, in their migrations, do not fly pell-mell, but in a regular figure, in order to cut the air with greater eaſe; for example, in long lines, in the figure of a ⩥, or ſome pointed form or letter, as the ancients report that the cranes aſſumed in their annual migrations, till their order was broken by ſtorms. See *Lucan*, lib. v. l. 711.

The flight of birds is much aſſiſted by their being endowed with the peculiar faculty of enlarging their bulk at will; and from this circumſtance the animal is enabled to buoy itſelf up the eaſier in the air, its ſpecific gravity being leſſened in proportion as the bulk is increaſed.

This ariſes from certain air veſſels communicating with the lungs, and diſperſed over various parts of the body, even to the bones; whereby the bird, by filling or emptying theſe veſſels, has the power of contracting or dilating itſelf according to the occaſion it may have for the change. See ZOOTOMY.

SECT. III. *Of the* NUPTIALS, NIDIFICATION, *and* EGGS *of* BIRDS.

1. MOST birds are monogamous, or pair; in ſpring fixing on a mate, and keeping conſtant till the cares of incubation and educating the young brood is paſt. This is the caſe, as far as we know, with all the birds of the 1ſt, 2d, 4th, and 5th orders. Birds that loſe their mates early, aſſociate with others; and birds that loſe their firſt eggs will pair and lay again. The male, as well as the female, of ſeveral, join alternately in the act of incubation, and always in that of nutrition; when the young are hatched, both are buſied in looking out for and bringing food to the neſtlings; and, at that period the mates of the melodious tribes, who before were perched on ſome ſprig, and by their warbling alleviated the care of the females confined

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confined to the neſt, now join in the common duty.

Of the gallinaceous tribe, the greateſt part are polygamous, at leaſt in a tame ſtate; the pheaſants, many of the grous, the partridges, and buſtards, are monogamous; of the grous, the cock of the wood and the black game aſſemble the females, during the ſeaſon of love, by their cries, *Et venerem incertam rapiunt.*

The males of polygamous birds neglect their young; and, in ſome caſes, would deſtroy them, if they met with them. The economy of the ſtruthious order, in this reſpect, is obſcure. It is probable that the birds which compoſe it are polygamous, like the common poultry, for they lay many eggs; the dodo, however, is ſaid to lay but one.

All waders or cloven-footed fowls are monogamous; and all with pinnated feet are alſo monogamous, except the ruffs. The ſwimmers or web-footed fowls obſerve the ſame order, as far as can be remarked with any certainty; but many of the auks aſſemble in the rocks in ſuch numbers, and each individual ſo contiguous, that it is not poſſible to determine their method in this article.

The affection of birds to their young is very violent during the whole time of nutrition, or as long as they continue in a helpleſs ſtate; but as ſoon as the brood can fly and ſhift for itſelf, the parents neglect, and even drive it from their haunts; the affection ceaſing with the neceſſity of it.

2. The NEST of a bird is one of thoſe daily miracles that, from its familiarity, is paſſed over without regard. We ſtare with wonder at things that rarely happen, and neglect the daily operations of nature that ought firſt to excite our admiration and claim our attention. Each bird, after nuptials, prepares a place ſuited to its ſpecies, for depoſiting its eggs and ſheltering its little brood; different genera, and different ſpecies, ſet about the taſk in a manner ſuitable to their ſeveral natures; yet, every individual of the ſame ſpecies collects the very ſame materials, puts them together in the ſame form, and chooſes the ſame ſort of ſituation for placing this temporary habitation. The young bird of the laſt year, which never ſaw the building of a neſt, directed by a heaven-taught ſagacity, purſues the ſame plan in the ſtructure of it, and ſelects the ſame materials as its parents did before. Birds of the ſame ſpecies, of different and remote countries, do the ſame. The ſwallows of Britain, and of the remoter parts of Germany, obſerve the ſame order of architecture; and in many inſtances have been known to return to the ſame places in which they had reared their young the year before.

The neſts of the larger rapacious birds are rude, made of ſticks and bents, but often lined with ſomething ſoft; they generally build in high rocks, ruined towers, and in deſolate places; enemies to the whole feathered creation, they ſeem conſcious of attacks, and ſeek ſolitude. A few build upon the ground. Shrikes, allied to the rapacious birds, build their neſts in buſhes, with moſs, wool, &c.

The order of pies is very irregular in the ſtructure of their neſts. Parrots, and in fact all birds with two toes forward and two backward, lay their eggs in the hollows of trees. And moſt of this order creep along the bodies of trees, and lodge their eggs alſo within them. Crows build in trees: among them, the neſt of the magpie, compoſed of rude materials, is made with much art, quite covered with thorns, and only a hole left for admittance.

The neſts of the orioles are contrived with wonderful ſagacity, and are hung at the end of ſome bough, or between the forks of extreme branches. In Europe, only three birds have penſile neſts; the common oriole, the parus pendulinus or hang-neſt titmouſe, and one more. But in the torrid zone, where the birds fear the ſearch of the gliding ſerpent and inquiſitive monkey, the inſtances are very frequent; a marvellous inſtinct implanted in them for the preſervation of their young. See ORIOLUS.

All of the gallinaceous and ſtruthious orders lay their eggs on the ground. The oſtrich is the only exception, among birds, of the want of natural affection: "Which leaveth her eggs in the earth, and warmeth them in the duſt, and forgetteth that the foot may cruſh them, or the wild beaſt may break them."

The columbine race makes a moſt artleſs neſt, a few ſticks laid acroſs may ſuffice. Moſt of the paſſerine order build their neſts in ſhrubs or buſhes, and ſome in holes of walls or banks. Several in the torrid zone are penſile from the boughs of high trees: that of the *tailor bird* is a wondrous inſtance. (See MOTACILLA, N° 17.) Some of this order, ſuch as larks, and the goatſucker, on the ground. Some ſwallows make a curious plaſter neſt beneath the roofs of houſes; and an Indian ſpecies, neſts of a certain glutinous matter, which are collected as delicate ingredients for ſoups of Chineſe epicures. See BIRDS NESTS, § 4.

Moſt of the cloven-footed water fowls, or waders, lay upon the ground. Spoonbills and the common herons build in trees, and make up large neſts with ſticks, &c. Storks build on churches, or the tops of houſes. Coots make a great neſt near the water ſide. Grebes, in the water, a floating neſt, perhaps adhering to ſome neighbouring reeds.

Web-footed fowls breed on the ground, as the avoſets, terns, ſome of the gulls, merganſers, and ducks: the laſt pull the down from their breaſts to make a ſofter and warmer bed for their young. Auks and guillemots lay their eggs on the naked ſhelves of high rocks: pinguins, in holes under ground: among the pelicans, that which gives name to the genus makes its neſt in the deſart, on the ground. Shags, ſometimes on trees; corvorants and gannets, on high rocks, with ſticks, dried algæ, and other coarſe materials.

3. Rapacious birds in general, lay few EGGS; eagles and the larger kinds, fewer than the leſſer. The eggs of falcons and owls are rounder than thoſe of moſt other birds; they lay more than ſix.

The order of pies vary greatly in the number of their eggs. Parrots lay only two or three white eggs. Crows lay ſix eggs, greeniſh, mottled with duſky. Cuckoos, as far as we can learn, two. Woodpeckers, wryneck, and kingfiſher, lay eggs of a clear white and ſemi-tranſparent colour. The woodpeckers lay ſix, the others more.

The nuthatch lays often in the year, eight at a time,

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time, white, ſpotted with brown. The hoopoe lays but two cinereous eggs. The creeper lays a great number of eggs. The honeyſucker, the leaſt and moſt defenceleſs of birds, lays but two; but the extinction of the genus is prevented, by a ſwiftneſs of flight that eludes every purſuit.

The gallinaceous order, the moſt uſeful of any to mankind, lay the moſt eggs, from 8 to 20. *Benigna circa hoc natura, innocua et ſtrule.ta animalia fœcunda generavit*, is a fine obſervation of Pliny; with exception of the buſtard, a bird that hangs between the gallinaceous and the waders, which lays only two. The columbine order lays but two white eggs; but the domeſtic kind, breeding almoſt every month, ſupports the remark of the Roman naturaliſt.

All of the paſſerine order lay from four to ſix eggs, except the titmouſe and the wren, which lay 15 or 18, and the goatſucker, which lays only two. The ſtruthious order diſagree much in the number of eggs; the oſtrich laying many, as far as 50, the dodo but one.

The cloven-footed water fowls, or waders, lay, in general, four eggs; the crane and the Norfolk plover ſeldom more than two. All of the ſnipe and plover genus are of a dirty white, or olive ſpotted with black, and ſcarce to be diſtinguiſhed in the holes they lay in. The land rails (an ambiguous ſpecies), lay from 15 to 20. Of birds with pinnated feet, the coot lays ſeven or eight eggs, and ſometimes more. Grebes, from four to eight, and thoſe white.

The web-footed, or ſwimmers, differ in the number of their eggs. Thoſe which border on the order of waders lay few eggs; the avoſet two, the flamingo three, the albatroſs, the auks, and guillemots, lay only one egg a-piece; the eggs of the two laſt are of a ſize ſtrangely large in proportion to the bulk of the birds. They are commonly of a pale green colour, ſpotted, and ſtriped ſo variouſly, that not two are alike; which gives every individual the means of diſtinguiſhing its own on the naked rock where ſuch multitudes aſſemble. Divers lay only two. Terns and gulls lay about three eggs, of a dirty olive, ſpotted with black. Ducks lay from 8 to 20 eggs; the eggs of all the genus are of a pale green, or white, and unſpotted. Pinguins probably lay but one egg.

Of the pelican genus, the gannet lays but one egg; the ſhags or corvorants, ſix or ſeven, all white; the laſt the moſt oblong of eggs.

A minute account of the eggs of birds might occupy a treatiſe of itſelf. This is only meant to ſhow the great conformity in the ſhape and colours of congenerous birds; and that the ſame uniformity of colour is in the eggs as in the plumage of the birds they belong to.

ZINANNI publiſhed, at Venice, in 1737, *A Treatiſe on Eggs*, illuſtrated with accurate figures of 106 eggs. Mr Reyger of Dantzic publiſhed, in 1766, a poſthumous work by Klein, with 21 plates, elegantly coloured; but much remains for future writers.

SECT. IV. *Of* SYSTEMS *of* ORNITHOLOGY.

CONSIDERING the many ſyſtems that have been offered to the public of late years, Mr Pennant gives the preference to that compoſed by Mr Ray, in 1667, and afterwards publiſhed in 1678; but obſerves, at the ſame time, that it would be unfair to conceal the writer from whom our great countryman took the original hint of forming that ſyſtem, which has proved the foundation of all that has been compoſed ſince that period.

BELON of Mans, who firſt attempted to range birds according to their natures, was a Frenchman; and performed great matters, conſidering the unenlightened age he lived in; for his book was publiſhed in 1555. His arrangement of rapacious birds is as judicious as that of the lateſt writers. His 2d chapter treats of vultures, falcons, ſhrikes, and owls; in the two next he paſſes over to the web-footed water fowls, and to the cloven-footed; in the 5th he includes the gallinaceous and ſtruthious, but mixes with them the plovers, buntings, and larks; in the 6th are the pies, pigeons, and thraſhes; and the 7th takes in the reſt of the paſſerine order.

Notwithſtanding the great defects that every naturaliſt will at once ſee in the arrangement of the leſſer birds of this writer, yet he will obſerve a rectitude of intention in general, and a fine notion of ſyſtem, which was left to the following age to mature and bring to perfection. Accordingly Mr RAY and his illuſtrious pupil Francis Willoughby aſſumed the plan; but with great judgment flung into their proper ſtations and proper genera thoſe which Belon had confuſedly mixed together. They formed the great diviſion of terreſtrial and aquatic birds; they made every ſpecies occupy their proper place, conſulting at once exterior form and natural habit. They could not bear the intermixture of aquatic birds with terreſtrial. They placed the laſt by themſelves; clear and diſtinct from thoſe whoſe haunts and economy were ſo different.

The ſubjoined ſcheme of arrangement by Mr Pennant, is introduced with the following obſervations.

"Mr Ray's general plan is ſo judicious, that to me it ſeems ſcarce poſſible to make any change in it for the better; yet, notwithſtanding he was in a manner the founder of ſyſtematic zoology, later diſcoveries have made a few improvements on his labours. My candid friend Linnæus did not take it amiſs, that I, in part, neglect his example; for I permit the land fowl to follow one another, undivided by the water fowl, the grallæ, and anſeres of his ſyſtem, (ſee ZOOLOGY); but, in my generical arrangement, I moſt punctually attend to the order he has given in his ſeveral diviſions, except in thoſe of his anſeres and a few of his grallæ. For, after the manner of Mr Briſſon, I make a diſtinct order of water fowl with pinnated feet, placing them between the waders or cloven-footed water fowl and the web-footed. The oſtrich and land-birds with wings uſeleſs for flight, I place as a diſtinct order. The trumpeter (*pſophia Linnei*), and the buſtards, I place at the end of the gallinaceous tribe; the laſt granivorous, ſwift runners, avoiders of wet places; and both have bills ſomewhat arched. It muſt be confeſſed, that both have legs naked above the knees, and the laſt, like the waders, lay but few eggs. They ſeem

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ambiguous birds that have affinity with each order; and it is hoped that each naturalist may be indulged the toleration of placing them as suits his own opinion."

TABLE *of* PENNANT'S ARRANGEMENT, *with the correspondent* ORDERS *and* GENERA *in the* SYSTEMA NATURÆ *of* LINNÆUS.

DIVISION I. LAND-BIRDS. DIVISION II. WATER-FOWL.

Divif. I.	Order I. Rapacious.	*Accipitres*	LIN.
	II. Pies.	*Picæ.*	
	III. Gallinaceous.	*Gallinæ.*	
	IV. Columbine.	*Paſſeres.*	
	V. Paſſerine.	*Paſſeres.*	
	VI. Struthious.	*Gallinæ.* / *Grallæ.*	
Divif. II.	Order VII. Cloven-footed or Waders.	*Grallæ.*	
	VIII. Pinnated feet.	*Anſeres.* / *Grallæ.*	
	IX. Web-footed.	*Anſeres.* / *Grallæ.*	

DIVISION I.

ORD. I. RAPACIOUS.

1	Vulture	*Vultur*
2	Falcon	*Falco*
3	Owl	*Strix*

ORD. II. PIES.

4	Shrike	*Lanius*
5	Parrot	*Pſittacus*
6	Toucan	*Ramphaſtos*
7	Motmot	*Ramphaſtos*
8	Hornbill	*Buceros*
9	Beefeater	*Buphaga*
10	Ani	*Crotophaga*
11	Wattle	
12	Crow	*Corvus*
13	Roller	*Coracias*
14	Oriole	*Oriolus*
15	Grakle	*Gracula*
16	Paradiſe	*Paridiſæa*
17	Curucui	*Trogon*
18	Barbet	*Bucco*
19	Cuckoo	*Cuculus*
20	Wryneck	*Junx*
21	Woodpecker	*Picus*
22	Jacamar	*Alcedo*
23	Kingsfiſher	*Alcedo*
24	Nuthatch	*Sitta*
25	Tody	*Todus*
26	Bee-eater	*Merops*
27	Hoopoe	*Upupa*
28	Creeper	*Certhia*
29	Honeyſucker	*Trochilus.*

ORD. III. GALLINACEOUS.

30	Cock	*Phaſianus*
31	Turkey	*Meleagris*
32	Pintado	*Numida*
33	Curaſſo	*Crax*
34	Peacock	*Pavo*
35	Pheaſant	*Phaſianus*
36	Grous	*Tetrao*
37	Partridge	*Tetrao*
38	Trumpeter	*Pſophia*
39	Buſtard	*Otis.*

ORD. IV. COLUMBINE.

40	Pigeon	*Columba.*

ORD. V. PASSERINE.

41	Stare	*Sturnus*
42	Thruſh	*Turdus*
43	Chatterer	*Ampelis*
44	Coly	*Loxia*
45	Groſbeak	*Loxia*
46	Bunting	*Emberiza*
47	Tanager	*Tanagra*
48	Finch	*Fringilla*
49	Flycatcher	*Muſicapa*
50	Lark	*Alauda*
51	Wagtail	*Motacilla*
52	Warbler	*Motacilla*
53	Manakin	*Pipra*
54	Titmouſe	*Parus*
55	Swallow	*Hirundo*
56	Goatſucker	*Caprimulgus.*

ORD. VI. STRUTHIOUS.

57	Dodo	*Didus*
58	Oſtrich	*Struthio.*

DIVISION II.

ORD. VII. CLOVEN-FOOTED, or WADERS.

59	Spoonbill	*Platalea*
60	Screamer	*Palamedea*
61	Jabiru	*Myſteria*
62	Boatbill	*Cancroma*
63	Heron	*Ardea*
64	Umbre	*Scopus* BRISS.
65	Ibis	*Tantalus*
66	Curlew	*Scolopax*
67	Snipe	*Scolopax*
68	Sandpiper	*Tringa*
69	Plover	*Charadrius*
70	Oyſtercatcher	*Hæmatopus*
71	Jacana	*Parra*
72	Pratincole	*Hirundo*
73	Rail	*Rallus*
74	Sheathbill	
75	Gallinule	*Fulica.*

ORD. VIII. PINNATED FEET.

76	Phalarope	*Tringa*
77	Coot	*Fulica*
78	Grebe	*Colymbus.*

ORD. IX. WEB-FOOTED.

79	Avoſetta	*Recurviroſtra*
80	Courier	*Currira* BRISS.
81	Flammant	*Phœnicopterus*
82	Albatroſs	*Diomedia*
83	Auk	*Alca*
84	Guillemot	*Colymbus*
85	Diver	*Colymbus*
86	Skimmer	*Rhyncops*
87	Tern	*Sterna*
88	Gull	*Larus*
89	Petrel	*Procellaria*
90	Merganſer	*Mergus*
91	Duck	*Anas*
92	Pinguin	*Diomedia* / *Phæton*
93	Pelican	*Pelicanus*
94	Tropic	*Phæton*
95	Darter	*Platus*

TABLE

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TABLE *of the* ORDERS *and* GENERA *in the* INDEX ORNITHOLOGICUS *and* GENERAL SYNOPSIS *of* BIRDS, *published by* MR LATHAM; *who has treated the subject very copiously, and made a very great addition to this branch of natural history.*

Ind. Orn.	*Syn. of Birds.*
AVIUM ORDINES.	ORDERS OF BIRDS.
DIV. I.	DIV. I.
I. Accipitres	*Rapacious*
II. Picæ	*Pies*
III. Passeres	*Passerine*
IV. Columbæ	*Columbine*
V. Gallinæ	*Gallinaceous*
VI. Struthiones	*Struthious*
DIV. II.	DIV. II.
VII. Grallæ	*Waders*
VIII. Pinnatipedes	*Pinnated feet*
IX. Palmipedes	*Web-footed*
AVIUM GENERA.	GENERA OF BIRDS.
DIV. I.	DIV. I.
AVES TERRESTRES.	*LAND BIRDS.*
ORDO I.	ORDER I.
ACCIPITRES.	RAPACIOUS.
1 Vultur	*Vulture*
2 Falco	*Falcon*
3 Strix	*Owl*
ORDO II.	ORDER II.
PICÆ.	PIES.
4 Lanius	*Shrike*
5 Pfittacus	*Parrot*
6 Ramphaftos	*Toucan*
7 Momotus	*Motmot*
8 Scythrops	
9 Buceros	*Hornbill*
10 Buphaga	*Beefeater*
11 Crotophaga	*Ani*
12 Callæas	*Wattle Bird*
13 Corvus	*Crow*
14 Coracias	*Roller*
15 Oriolus	*Oriole*
16 Gracula	*Grakle*
17 Paradiſæa	*Paradiſe Bird*
18 Trogon	*Curucui*
19 Bucco	*Barbet*
20 Cuculus	*Cuckoo*
21 Yunx	*Wryneck*
22 Picus	*Woodpecker*
23 Galbula	*Jacamar*
24 Alcedo	*Kingfiſher*
25 Sitta	*Nuthatch*
26 Todus	*Tody*
27 Merops	*Bee-eater*
28 Upupa	*Hoopoe*
29 Certhia	*Creeper*
30 Trochilus	*Humming Bird*
ORDO III.	ORDER III.
PASSERES.	PASSERINE.
31 Sturnus	*Starling*
32 Turdus	*Thruſh*
33 Ampelis	*Chatterer*
34 Colius	*Coly*
35 Loxia	*Groſbeak*
36 Emberiza	*Bunting*
37 Tanagra	*Tanager*
38 Fringilla	*Finch*
39 Phytotoma	
40 Muſcicapa	*Flycatcher*
41 Alauda	*Lark*
42 Motacilla	*Wagtail*
43 Sylvia	*Warbler*
44 Pipra	*Manakin*
45 Parus	*Titmouſe*
46 Hirundo	*Swallow*
47 Caprimulgus	*Goatſucker*
ORDO IV.	ORDER IV.
COLUMBÆ.	COLUMBINE.
48 Columba	*Pigeon*
ORDO. V.	ORDER V.
GALLINÆ.	GALLINACEOUS.
49 Pavo	*Peacock*
50 Meleagris	*Turkey*
51 Penelope	
52 Numida	*Pintado*
53 Crax	*Curaſſo*
54 Phaſianus	*Pheaſant*
55 Tinamus	*Tinamou*
56 Tetrao	*Grous*
57 Perdix	*Partridge*
58 Pſophia	*Trumpeter*
59 Otis	*Buſtard*
ORDO VI.	ORDER VI.
STRUTHIONES.	STRUTHIOUS.
60 Didus	*Dodo*
61 Struthio	*African Oſtrich*
62 Caſuarius	*Caſſowary*
63 Rhea	*American Oſtrich*
DIV. II.	DIV. II.
AVES AQUATICÆ.	*WATER BIRDS.*
ORDO VII.	ORDER VII.
GRALLÆ.	WADERS.
64 Platalea	*Spoonbill*
65 Palamedea	*Screamer*
66 Myſteria	*Jabiru*
67 Cancroma	*Boatbill*
68 Scapus	*Umbre*
69 Ardea	*Heron*
70 Tantalus	*Ibis*
71 Numenius	*Curlew*
72 Scolopax	*Snipe*
73 Tringa	*Sandpiper*
74 Charadrius	*Plover*
75 Curſorius	
76 Hæmatopus	*Oyſter-catcher*
77 Glareola	*Pratincole*
78 Rallus	*Rail*
79 Parra	*Jucana*
80 Gallinula	*Gallinule*
81 Vaginalia	*Sheath-bill*
ORDO VIII.	ORDER VIII.
PINNATIPEDES.	With PINNATED FEET.
82 Phalaropus	*Phalarope*
83 Fulica	*Coot*
84 Podicepo	*Grebe*
ORDO IX.	ORDER IX.
PALMIPEDES.	WEB-FOOTED.
* Pedibus longioribus	* *With long legs*
85 Recurviroſtra	*Avoſet*
86 Corrira	*Courier*
87 Phœnicopterus	*Flamingo*
†† Pedibus brevioribus	†† *With ſhort legs*
88 Diomedea	*Albatroſs*
89 Aica	*Auk*
90 Uria	*Guillemot*

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Ind. Orn.	Syn. of Birds.
91 Colymbus	*Diver*
92 Rhynchops	*Skimmer*
93 Sterna	*Tern*
94 Larus	*Gull*
95 Procellaria	*Petrel*
96 Mergus	*Merganſer*
97 Anas	*Duck*
98 Aptenodytes	*Pinguin*
99 Pelicanus	*Pelican*
100 Phaeton	*Tropic Bird*
101 Plotus	*Darter*

In the latter arrangements of birds, although it cannot be ſaid that the authors have loſt ſight of their great predeceſſor Linnæus, yet the neceſſity of deviating from him muſt ſeem obvious, when the very great number of ſpecies which have come to our knowledge of late years, ſufficient to juſtify ſuch alteration, and ſatisfy the moſt ſcrupulous advocates of this great man, is conſidered. In this laſt edition of the *Syſtema Naturæ*, Linnæus enumerates about 930 birds only; but in the Index and Synopſis of Mr Latham, they have been increaſed to very near 4000, a number never imagined by former writers on the ſubject to exiſt in nature. See Zoology.

ORO

ORNITHOMANCY, a ſpecies of divination performed by means of birds; being the ſame with augury. See Augury and Divination.

ORNITHON, an ancient town of Phœnicia, between Tyre and Sidon.

ORNITHOPUS, in botany, Birds-foot, a genus of the decandria order belonging to the diadelphia claſs of plants; and in the natural method ranking under the 32d order, *Papilionaceæ*. The legumen is articulated, cylindrical, and bent in the form of a bow.

ORNITHOTROPHY, *n. ſ.* a place in which birds are fed. *Aſh.*

ORNON, an iſland of Sweden, near the E. coaſt of the Baltic.

ORNOS. See Caprification.

ORNUS, fraxinus, a ſpecies of the aſh tree, which, according to Dr Cirillo of Naples, produces the manna. (See Fraxinus.) Its ſmaller leaves are ſawed, with flowers having petals. To obtain the manna, thoſe employed, in July and Auguſt, make an oblong inciſion, and take off from the bark of the tree about 3 inches in length and 2 in breadth: they leave the wound open, and by degrees the manna runs out, is almoſt ſuddenly thickened to its proper conſiſtence, and is found adhering to the bark. This is collected in baſkets, and called *manna graſſa*. When they want fine manna, they apply to the inciſion of the bark thin ſtraw, or ſmall bits of ſhrubs; ſo that the manna in coming out runs upon theſe bodies, and is collected in a ſort of regular tubes, which give it the name of *manna in cannoli*.

ORO, a mountain of Switzerland, in the country of the Griſons; 13 miles W. of Bormio.

OROANDA, an ancient town of Piſidia, now called Haviran. Liv. lib. 38. c. 18.

OROBANCHE, in botany, Broom Rape, a genus of the angioſpermia order, belonging to the didynamia claſs of plants; and in the natural method ranking under the 40th order, *Perſonatæ*. The calyx is bifid; the corolla ringent; the capſule unilocular, bivalved, and polyſpermous; there is a glandule under the baſe of the germen.

OROBIA, an ancient town of Eubœa.

OROBII, an ancient people of Italy, who reſided near Mediolanum, now Milan.

OROBIO, Balthaſar, a celebrated Jew of Spain. He was ſo ſkilled in the ſcholaſtic philoſophy of Spain, that he was made profeſſor of metaphyſics in the univerſity of Salamanca. Afterwards, however, applying himſelf to the ſtudy of phyſic, he practiſed that art at Seville with ſucceſs, till, accuſed of Judaiſm, he was thrown into the inquiſition, and ſuffered the moſt dreadful tortures. After three years confinement, and perſeverence in denying his religion, he was diſcharged, and repairing to France, was made profeſſor of phyſic at Thouloufe. At laſt, weary of diſſembling, he repaired to Amſterdam, where he was circumciſed, took the name of Iſaac, and profeſſed Judaiſm; ſtill continuing, however, to practiſe phyſic, in which he was much eſteemed. He diſtinguiſhed himſelf in a controverſy with Limborch; by writing againſt Spinoza, &c. Orobio died in 1687.

OROBUS, bitter vetch, a genus of the decandria order, belonging to the diadelphia claſs of plants; and in the natural method ranking under the 32d order, *Papilionaceæ*. The ſtyle is linear; the calyx obtuſe at the baſe, with the upper ſegments deeper and ſhorter than the reſt. There are 9 ſpecies. All of them have fibrated roots, which are perennial, but are annual in ſtalk, riſing early in ſpring, and decaying in autumn. They are very hardy plants, and proſper in any common ſoil of a garden. Moſt of the ſorts are very floriferous, and the flowers conſpicuous and ornamental for adorning the flower compartments. The flowers are univerſally of the papilionaceous or butterfly kind, conſiſting each of 4 irregular petals, *i. e.* a ſtandard, two wings, and a keel; and are all ſucceeded by long taper ſeed-pods, furniſhing plenty of ripe ſeed in autumn; by which the plants may be propagated abundantly, as alſo by parting the roots.

Orobus Tuberosus, Wood Pea or Pease heath. The Scots Highlanders have a great eſteem for the tubercles of the roots of this ſpecies. They dry and chew them to give a better reliſh to their liquor; they alſo affirm that they are good againſt moſt diſorders of the breaſt, and that by the uſe of them they are enabled to reſiſt hunger and thirſt for a long time. In Breadalbane and Roſsſhire, they ſometimes bruiſe and ſteep them in water, and make an agreeable fermented liquor with them. They have a ſweet taſte, ſomething like the roots of liquorice; when boiled, are nutritious

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tritious and well flavoured; and in times of ſcarcity they have ſerved as a ſubſtitute for bread.

ORODADA PENA, a town of Peru, on the coaſt of the South Sea, 6 miles S. by W. of Payta, and 6 miles N. of Lobos.

ORODES, a prince of Parthia, who murdered his brother Mithridates, and aſcended his throne. He defeated Craſſus the Roman triumvir, and poured melted gold down the throat of his fallen enemy, to reproach him for his avarice and ambition. He followed the intereſt of Caſſius and Brutus at Philippi. It is ſaid, that when Orodes became old and infirm, his 30 children applied to him, and diſputed in his preſence their right to the ſucceſſion. Phraates, the eldeſt of them, obtained the crown from his father; and, to haſten him out of the world, he attempted to poiſon him. The poiſon had no effect; and Phraates, ſtill determined on his father's death, ſtrangled him with his own hands, about 35 years before the Chriſtian era. Orodes had reigned about 50 years.

OROE, an iſland of Denmark at the S. end of the Little Belt, 12 miles long and two broad; 8 miles SW. of Funen, and 6 W. of Langland. Lon. 10. 20. E. Lat. 54. 59. N.

OROESKIOBING, a ſea-port town of Denmark, on the E. of ORoe.

OROMASDES, OROMAZ, OROMAZDES, OROMAZES, } names of the ſupreme god of the ancient Perſians; the origin of all good, as Arimanius was of all evil. See ARIMANIUS, and MYSTERIES, § 14, 27; and POLYTHEISM.

OROMCOTO, a river of N. America, in New Brunſwick, which runs into St John's river.

OROMEDON, a mountain in the iſle of Coos.

OROMTCHI, a town of Aſia, in Thibet. Lon. 104. 30. E. of Ferro. Lat. 44. 58. N.

ORON, a town of Switzerland, in Bern; 6 miles W. of Vevai.

ORONDOCKS, a tribe of North American Indians, in Canada, who reſide near Trois Rivieres. They have 100 warriors.

ORONHI, a town of Aſia, in Thibet, 38 miles W. of Yolotou Hotun.

ORONOKO. See OROONOKO.

ORONSAY, or ORANSAY, one of the Hebrides, a ſmall but fertile iſland, ſeparated from Colonſay by a narrow channel. See COLONSAY. It is ſo named from *Oran*, an ancient ſaint. The walls of an ancient priory of Ciſtertians ſtill remain, and exhibit one of the fineſt relics of antiquity, next to Iona-kill, in all the Hebrides.

ORONTES, a famous river of Syria, about which Strabo and other ancient authors mention many fabulous ſtories of its diſappearing and running under ground for ſeveral miles, &c. It riſes in Cœloſyria, and after a rapid courſe, falls into the Mediterranean below Antioch. It is now called *Aſi*.

ORONTIUM, in botany, a genus of the monogynia order, belonging to the hexandria claſs of plants, and in the natural method ranking under the ſecond order *Piperitæ*. The ſpadix is cylindrical, covered with florets; the corolla hexapetalous and naked; there is no ſtyle; the follicles are monoſpermous.

OROONOKO, a great river of Terra Firma, which riſes in Popayan, and falls into the Atlantic, by 16 mouths. It is one of the largeſt rivers in S. America; and is remarkable for riſing and falling once a year. It riſes gradually for five months, remains ſtationary for one; then falls gradually for other 5 months, and continues ſtationary for one. Theſe changes are invariable. The height of the flood depends on the breadth of the river. In one part, where it is narroweſt, it riſes to 120 feet. Its whole length is 755 leagues; and its impetuoſity preſerves its water freſh, 12 leagues from its mouths, which are in Lon. 60. 0. W. Lat. 9. 0. N.

(1.) OROPESA, a town of Spain, in New Caſtile, 12 miles E. of Placentia, and 50 W. of Toledo. Lon. 4. 36. W. Lat. 39. 50. N.

(2.) OROPESA, a town of Spain in Valencia; on the Mediterranean; 32 miles ENE. of Segorba. Lon. 16. 48. E. of Teneriffe. Lat. 40. 8. N.

(3.) OROPESA, a town of Peru, in La Plata, on the valley of Cochambamba, 120 miles NW. of La Plata, 150 NE. of Potoſi, and 750 from Lima. The natives carry on a great trade in corn and fruits. Lon. 63. 30. W. Lat. 18. 0. S.

OROPPA, a mountain of France, in the dep. of Doria, and late Piedmonteſe; 6 miles N. of Biella.

(1.) OROPUS, an ancient town of Bœotia, near the Euripus, on the borders of Attica, which was often a ſubject of conteſt between the Athenians and the Bœotians, till at laſt it was confirmed to the former by Philip II. of Macedon.

(§ 3.) OROPUS, two towns in Eubœa and Macedon.

(1.) OROSA, an iſland of Scotland, in Loch Lunart, on the W. coaſt of Argyleſhire.

(2.) OROSA, a town of Sardinia on the E. coaſt, 58 miles E. of Algeri, and 73 NNE. of Cagliari.

OROSIUS, Paul, a Spaniſh hiſtorian and divine, and a diſciple of St Auguſtin: who ſent him to Jeruſalem to conſult St Jerome on the origin of the ſoul. He wrote an Univerſal Hiſtory from the Creation to his own time, entitled *Miſeria Humanæ*, in which he diſplays more learning and diligence than chronological accuracy. The beſt edition is that of Havercanys, 4to. *Lug. Bat.* 1767. He wrote alſo a treatiſe on Free Will, and other pieces. He flouriſhed about A. D. 416.

OROSPEDA, a mountain of Spain, in Grenada. *Strabo.*

OROSWEG, a town of Hungary, with a biſhop's ſee, 8 miles N. of Munkacz.

OROSZLANKO, a caſtle of Hungary, 8 miles W. of Boleſko.

OROUST, an iſland on the W. coaſt of Sweden, 40 miles in circumference. Lon. 11. 30. E. Lat. 58. 10. N.

(1.) * ORPHAN. *n. ſ.* [ὀρφανος; *orphelin*, Fr.] A child who has loſt father or mother, or both.—

Poor *orphan* in the wide world ſcattered,
As budding branch rent from the native tree;
Such is the ſtate of man. *Spenſer.*

Who can be bound by any ſolemn vow
To reave the *orphan* of his patrimony? *Shak.*

Sad widows, by thee rifled, weep in vain,
And ruin'd *orphans* of thy rapes complain.
Sandys.

The

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The sea with spoils his angry bullets strow,
Widows and *orphans* making as they go.
Waller.

Pity, with a parent's mind,
This helpless *orphan*. *Dryden.*

—Collections were made for the relief of the poor, whether widows or *orphans*. *Nelson.*

(2.) * ORPHAN. *adj.* [*Orphelin*, Fr.] Bereft of parents.—This king left *orphan* both of father and mother. *Sidney.*

* ORPHANAGE. } *n. s.* [*orphelinage*, French,
* ORPHANISM. } from *orphan*.] State of an orphan.

ORPHANOTROPHY. *n. s.* [ὀρφανὸς and τρέφω.] An hospital for orphans.

ORPHAN'S ISLAND, an island of the United States, on the coast of Maine, belonging to Hancock county. It had 124 inhabitants in 1795.

(1.) ORPHEUS, a celebrated poet and musician of antiquity, according to Sir Isaac Newton, was the son of Æagrus, who received Thrace from Sesac when he conquered that country. With the kingdom, the latter gave Æagrus, one of his singing women to wife, who brought him Orpheus. Hence his mother was fabled to be Calliope. On account of the great antiquity of Orpheus, numberless fables have been intermingled with his history, but there can be no doubt of his existence. To his father he was indebted for his first instruction in religion, and he afterwards became a disciple of the Idea Dactyli in Crete. Thence he travelled into Egypt, and became a proficient in all kinds of literature. From the latter country he transplanted the whole fable of Osiris into Greece, adapting it to the family of Cadmus. The people held him in the highest veneration, supposing him to be possessed of the secrets of expiating crimes, curing diseases, and appeasing the Gods. He promulgated an idea of hell, instituted the mysteries of Hecate among the Æginetes, and those of Ceres at Sparta. He is chiefly famed for his music, which is poetically represented to have had the effect of taming the most ferocious animals, and making the trees of the forest dance in concert to his lyre. Eurydice made a deep impression on the melodious musician, and their nuptials were celebrated. Their happiness, however, was but short: for Aristæus became enamoured of her; and as she fled from her pursuer, a serpent bit her foot, and she died of the poisoned wound. Her loss was severely felt by Orpheus, and he resolved to recover her or perish in the attempt. With his lyre in his hand, he entered the infernal regions, and gained an easy admission to the palace of Pluto. Having charmed all hell with his strains, Pluto and Proserpine consented to restore Eurydice, provided he forbore looking behind him till he had come to the extremest borders of hell. The conditions were gladly accepted, and Orpheus was already in sight of the upper regions of the air, when he forgot his promise, and turning back to look at his wife, lost her for ever. The only comfort he could find was to soothe his grief by the sound of his musical instrument in grottoes or on mountains. He totally separated himself from the society of mankind; and the Thracian women, whom he had offended by his coldness to their amorous passion, attacked him while they celebrated the orgies of Bacchus; and after they had torn his body to pieces, they threw his head into the Hebrus, which still articulated *Eurydice! Eurydice!* as it was carried down the stream into the Ægean sea. Others say, that as he attempted to conjure his wife from the dead, which they understand by the story of his going down to hell, he thought he saw her; and when afterwards, on looking back, he missed her, he died of grief. Pausanias speaks of a temple in Thesprotia, where Orpheus went to call up the ghost of Eurydice. Some say that he was killed by a thunder-bolt. He was buried at Pieria, in Macedonia, according to Apollodorus. The inhabitants of Dion boasted that his tomb was in their city, and the people of Mount Libethrus in Thrace claimed the same honour; and reported that the nightingales, which built their nests near his tomb, sang with greater melody than all other birds. Orpheus, after death, received divine honours; the Muses gave an honourable burial to his remains, and his lyre became one of the constellations. Tzetzes explains the fable of his drawing his wife Eurydice from hell, by his great skill in medicine, with which he prolonged her life, and thus snatched her from the grave. With respect to the writings of Orpheus, he is mentioned by Pindar as author of the *Argonautics*, and Herodotus speaks of his *Orphics*. His hymns, says Pausanias, were very short, and but few in number. Those poems that bear his name, were published at Nuremberg 1702, and reprinted at Leipsic, in 1764, under the title of ΟΡΦΕΩΣ ΑΠΑΝΤΑ.

(2.) ORPHEUS, in ichthyology, the name of a fish caught in the Archipelago. It is of a broad and flat figure, and of a fine purple colour; its eyes are large and prominent, and its teeth serrated; it has only one fin on the back, and the anterior rays of that are prickly, the others soft to the touch; its anus is small, and is said to have no passage for the semen. This was the fish called *orpheus* by the ancients, but the modern Greeks call another fish by that name. It is a species of the sparus, of a flat figure, but very thick, has a small mouth, and is covered with small but very rough scales, which adhere very firmly to the flesh; the tail is not forked; it has fleshy lips, and very small teeth; its back and sides are black; its belly white; it has a large black spot at the root of the tail; its head is reddish, and its fins are very elegantly diversified with various colours; it has only one back-fin, and that has the anterior ray prickly, the hinder ones not at all so. It grows sometimes to 20 pounds weight, and is much esteemed among the modern Greeks.

ORPHIR, a parish of Scotland, in Mainland, Orkney, about 8 miles long, and from 2 to 3 broad. The surface is diversified with hills, vales, and rivulets, but has a bleak appearance for want of wood. It abounds with iron ore, and has a slate quarry and several chalybeate springs. The population, in 1794, was 826; decrease 29, since 1755. The number of sheep was about 3500. There are relics of 2 forts, and some ancient chapels.

ORPIERRES, a town of France, in the dep. of Upper Alps; 7½ miles S. of Serres, and 18 E. of Buis.

(1.)

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(1.) * ORPIMENT. *n. ſ.* [*auripigmentum*, Lat. *orpiment*, *orpin*, Fr.]—True and genuine *orpiment* is a foliaceous foſſil, of a fine and pure texture, remarkably heavy, and its colour is a bright and beautiful yellow, like that of gold. It is not hard, but very tough, eaſily bending without breaking. *Orpiment* has been ſuppoſed to contain gold, and is found in mines of gold, ſilver, and copper, and ſometimes in the ſtrata of marl. *Hill.*—For the golden colour, it may be made by ſome ſmall mixture of *orpiment*, ſuch as they uſe to braſs in the yellow alchymy; it will eaſily recover that which the iron loſeth. *Bacon.*

(2.) ORPIMENT, in natural hiſtory, a mineral compoſed of ſulphur and arſenic, ſometimes artificially produced, but found alſo native, and conſtituting one of the ores of arſenic. It is of two kinds, red and yellow, the former called REALGAR. See CHEMISTRY, *Index*, and MINERALOGY, *Part* II. *Chap.* VII. *Ord.* XIV. *Gen.* II. *Sp.* 1. and 2. It is commonly found in ſhapeleſs maſſes, very ſeldom cryſtalliſed; though Baron Borne once found it in a polyhedral form on a blue clay in Hungary. The name *red orpiment* has been given by the more judicious, to SANDARACH, and by the vulgar to red arſenic; but it is to be reſtrained only to this foſſile, which is of a fine bright red, and of the regular texture of the orpiments, and anſwering all their characters. It is a very beautiful ſubſtance of a fine bright red, very gloſſy, and a little tranſparent, and is found in the Turkiſh dominions, in the iſlands of the Archipelago, and even in our own country, Dr Hill having received ſome of it from Cornwall, under the name of *red mundic*. The yellow kind contains about one-tenth of its weight of ſulphur. It is the common orpiment of the ſhops. Some think, that the noxious qualities of the arſenic are ſo much counteracted by the ſulphur with which this ſubſtance is mixed, that it may be ſwallowed with ſafety; but Macquer poſitively aſſerts the contrary, and cautions againſt its uſe, even though we be certain that the orpiment is native. There is, beſides, a broad-flaked, gold-coloured kind, well known among the ancients, as is plain from the deſcription of it left by Dioſcorides, and ſtill much eſteemed by our painters. It is found in the iſlands of the Archipelago, in the mines of Goſſelaer, in Saxony, in ſome parts of Turkey, and the Eaſt Indies, and in its utmoſt purity about Smyrna. It makes the fineſt of all yellows in painting. The ſmall flaked, yellow kind, which is the common orpiment of the ſhops, is alſo a fine colour, though greatly inferior to the former. The Indians uſe orpiment, corrected with juice of lemons, with ſucceſs againſt fevers.

(1.) * ORPINE. *n. ſ.* [*orpin*, Fr. *telephon*, Lat. Liverer, or roſe root, *anacampſeros*, *Telephium*, or *Rhodia radix*. A plant. *Miller.*—

Cool violets and *orpine* growing ſtill,
Embathed balm and cheerful galingale. *Spenſer.*

(2.) ORPINE, in botany. See SEDUM.

(3.) ORPINE, BASTARD. See ADRACHNE.

(4.) ORPINE, LESSER. See CRASSULA.

(5.) ORPINE, TRUE. See TELEPHIUM.

(1.) ORR, a town of Arabia, in Yemen.

(2.) ORR, a river of Fifeſhire, which riſes from Loch-Orr, and after running E. 15 miles, joins the Leven, two miles below Markinch. It affords ſalmon, as well as trouts and pikes. A ſpecies of trouts reſembling ſalmon in taſte, and very delicate, are alſo found in it.

(3.) ORR, a river of Galloway. See URR.

ORRA, a mountain of Arabia, in Yemen.

ORRACH. See ATRIPLEX and the references under ORACH, § 2—6.

ORRATOR, a town of Ireland, in Tyrone.

(1.) * ORRERY. *n. ſ.* An inſtrument which, by many complicated movements, repreſents the revolutions of the heavenly bodies. It was firſt made by Mr Rowley, a mathematician born at Litchfield, and ſo named from his patron the earl of Orrery. By one or other of this family almoſt every art has been encouraged or improved.

(2.) *The* ORRERY was originally invented by Mr George Graham, but Mr Rowley copied it, and made the firſt for the earl of Orrery. Sir Richard Steel, who knew nothing of Mr Graham's machine, thinking to do juſtice to the firſt encourager, as well as to the inventor, of ſuch a curious inſtrument, called it an *Orrery*, and gave Mr Rowley the praiſe due to Mr Graham. Having already deſcribed the larger ſort of orreries, under the article ASTRONOMY, (ſee *Index*), we ſhall exhibit an idea of the theory and ſtructure of an uſeful, conciſe, and portable orrery, which any gentleman may have made for a ſmall expence, and will exhibit very juſtly the motions of all the primary planets about the ſun, by wheel-work; and thoſe who wiſh to have ſecondaries or moons, may have them placed about their primaries, moveable by the hand, ſo that the whole ſhall be a juſt repreſentation of the ſolar ſyſtem, or true ſtate of the heavens, for any given time of the year. For this purpoſe we muſt compare and find out the proportion which the periodical times, or revolutions of the primary planets, bear to that of the earth; which, with reſpect to the Georgium Sidus, are not as yet ſufficiently aſcertained; but thoſe of the other planets are expreſſed in the table below, where the firſt column is the time of the earth's period in days and decimal parts; the 2d that of the planets; the 3d and 4th are numbers in the ſame proportion to each other: as,

365,25 : 88	☿ :: 83 :	20, for Mercury.
365,25 : 224,7	♀ :: 52 :	32, for Venus.
365,25 : 686,9	♂ :: 40 :	75, for Mars.
365,25 : 4332,5	♃ :: 7 :	83, for Jupiter.
365,25 : 10759,3	♄ :: 5 :	148, for Saturn.

If we now ſuppoſe a ſpindle or arbor with fix wheels fixed upon it in an horizontal poſition, having the number of teeth in each correſponding to the numbers in the third column, viz. the wheel AM (*pl.* CCLX. *fig.* 8.) of 83 teeth, BL of 52, CK of 50 (for the earth), DI of 40, EH of 7, and FG of 5; and another ſet of wheels moving freely about an arbor, having the number of teeth in the 4th column, viz. AN of 20, BO of 32, CP of 50 (for the earth), DQ of 75, ER of 83, and FS of 148; then, if thoſe two arbors of fixed and moveable wheels are made of the ſize, and fixed at the diſtance from each other, as here repreſented in the ſcheme, the teeth of the former will take thoſe of the latter, and turn them very freely when the machine is in motion. Theſe arbors, with

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with their wheel, are to be placed in a box of an adequate size, in perpendicular position; the arbor of fixed wheels to move in pivots at the top and bottom of the box; and the arbor of moveable wheels to go through the top of the box, to a proper height; on the top of which is to be placed a round ball gilt with gold, to represent the sun. On each of the moveable wheels is to be fixed a socket or tube, ascending above the top of the box, and having on the top a wire fixed, and bent at a proper distance into a right angle upwards, bearing on the top a small round ball, representing its proper planets. If then on the lower part of the arbor of fixed wheels be placed a pinion of screw-teeth, a winch turning a spindle with an endless screw, playing in the teeth of the arbor, will turn it with all its wheels; and these wheels will move the others about, with their planets, in their proper and respective periods of time, very exactly. For, while the fixed wheel CK moves its equal CP once round, the wheel AM will move AN a little more than four times round; and so will nearly exhibit the motion of Mercury; and the wheel FG will turn the wheel FS about $\frac{1}{29.5}$ round, and so will truly represent the motion of Saturn; and the same is to be observed of all the rest.

(3—5.) ORRERY, Earls of. See BOYLE, N° 1. 2, 6.

(6.) ORRERY, a barony of Ireland, in Cork.

ORRIA, a town of Spain in Arragon.

ORRICE. See IRIS, N° 3.

ORRIN, a river of Scotland, in Ross-shire, which rises in the SW. part of that county, and after intersecting the parish of Urray from S. to N. falls into the Connon, at the church of Urray.

ORRINGTON, a town of the United States, in Maine, Hancock county, on the E. bank of the Penobscot, 256 miles NNE. of Boston. It had 477 citizens in 1795.

ORRIO, a town of Spain, in Biscay.

(1.) * ORRIS. *n. f.* [*oris*, Latin.] A plant and flower. *Miller.*—The nature of the *orris* root is almost singular; for roots that are in any degree sweet, it is but the same sweetness with the wood or leaf; but the *orris* is not sweet in the leaf; neither is the flower any thing so sweet as the root. *Bacon.*

(2.) ORRIS, in botany. See IRIS, N° 3.

(3.) * ORRIS. *n. f.* [old Fr.] A sort of gold or silver lace.

ORROCK, a hill of Scotland, in Fifeshire, near Burntisland; upon which there is a vitriolic spring, with excellent pasture, some capillary herbs, and several ancient tumuli, containing human bones. Diamonds of a pure water have also been found on it.

ORRUS, in botany, a name by which many of the ancients called the cultivated pine-tree, from its being remarkably full of juice.

ORSA, a town of Poland, in Lithuania.

ORSANO, a hill of Italy, in the department of the Mella, and district, late province of Brescia, near Cologne.

(1.) ORSATO, John Baptist, an able physician and antiquary, born at Padua in 1673. He wrote, 1. *Dissertatio epistolaris de Lucernis antiquis.* 2. A dissertation *De patera antiquorum.* 3. A small treatise *De sternis veterum*; and some other works.

(2.) ORSATO, Sertorio, a celebrated antiquarian, historian, and poet, born at Padua in 1617. He taught natural philosophy in the university of Padua, and was also a member of the academy of the Ricovrati. He died of a suppression of urine, on the 3d of July 1678. He wrote a great number of books, which are esteemed, in Latin and in Italian.

ORSAW. See ORSOY.

ORSCHA, a town of Russia, in Mogilev.

ORSCHOWA. See ORSOVA.

ORSERA, a populous town in Istria, with an ancient castle on a hill, in the district of Parenzo, five miles from the town of Parenzo, and four N. of Rovigno.

(1.) ORSI, Francis Joseph, a learned Cardinal born in Tuscany, and raised to the purple by Clement XIII. He wrote an *Ecclesiastical History*, in 20 vols. 4to.

(2.) ORSI, John Joseph, an ingenious philologer and poet, born at Bologna in 1652. He studied polite literature, philosophy, the civil law, and mathematics. His house was a kind of academy, where many persons of literature regularly assembled. He wrote many ingenious sonnets, pastorals, and other works, in Italian, and died in 1733.

ORSIELLE. See ARCHIL.

ORSIO, a town of Sweden, in Smaland.

ORSKAIA, a town of Russia, in Upha.

ORSOGNA, a town of Naples, in Abruzzo.

ORSOKO, a town of Africa, in Aota.

ORSOVA, or ORSCHOWA, a town and fort of European Turkey, in Servia, on both sides of the Danube. It was besieged by the Austrians, in 1790, but not taken. It is 60 miles SE. of Temesvar, and 75 E. of Belgrade.

ORSOY, or ORSAW, a town of France, in the department of the Roer, and ci-devant duchy of Cleves, on the Rhine; 20 miles SE. of Cleves. It was taken by the prince of Orange in 1634, and by the Duke of Orleans in 1672. Lon. 6. 43. E. Lat. 51. 38. N.

ORT, or LEER ORT, a town of Germany, in E. Friesland; 11 miles SSE. of Emden. Lon. 24. 46. E. of Emden. Lat. 53. 13. N.

(1.) ORTA. See HERCILIA.

(2.) ORTA, a town of Naples, in Capitanata.

(3.) ORTA, a town of Italy, in Patrimonio.

(4—5.) ORTA, a town and lake of Italy, in the department of the Agogna, and ci-devant Milanese, 21 miles NNW. of Novara, and 36 WNW. of Milan.

ORTAKI, a town of Turkey, in Natolia.

(1.) ORTEGAL, a town of Spain, in the province of Galicia, seated near

(2.) ORTEGAL, CAPE, the most northern promontory of Spain, where there is also a castle of the same name. Lon. 8. 20. W. Lat. 43. 50. N.

ORTEGIA, a genus of plants of the class triandria, belonging to the order monogynia, and, in the natural method, ranking under the 22d order, *Caryophyllea.*

ORTELIUS, Abraham, a celebrated geographer.

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pher, born at Antwerp, in 1527. He was well ſkilled in languages and mathematics, and acquired ſuch reputation by his ſkill in geography, that he was named the *Ptolemy of his time*. He reſided at Oxford in the reign of Edward VI. and came a ſecond time into England in 1577. He was the author of ſeveral excellent aſtronomical and geographical works. He died at Antwerp in 1598.

ORTELSBURG, a town of Ruſſia, in Oberland; 68 miles N. of Konigſberg, and 100 ESE. of Dantzick.

ORTENAU, a territory of Germany, in Suabia, bounded S. by Breſlau, N. by Baden, and E. by Wirtemberg; ſituated between Briſgaw, Baden, the Black Foreſt, and the Rhine, which ſeparates it from Alſace; firſt diſmembered from Suabia by the emp. Henry IV. and given to the D. of Zahringen, from whom it deſcended to the counts of Habſburg; but lately granted, (on the 21ſt Aug. 1802), along with BRISGAW, as indemnities to the ci-devant D. of Modena, by Bonaparte, who poſſeſſes that prince's hereditary dominions, now annexed to the kingdom of Italy.

ORTENBERG, a town of Germany, in Hanau Munzenberg, on the Nidder, 17 miles NE. of Franckfort on the Maine.

(1.) ORTENBURG, a town of Auſtria, in Carinthia, on the Drave, oppoſite its conflux with the Liſer; 6 miles ESE. of Saxenburg, and 32 W. of Clagenfurt. Lon. 13. 38. E. Lat. 46. 52. N.

(2.—4,) ORTENBURG, a county, town, and fort of Lower Bavaria. The count and people are Lutherans. The town lies 10 miles W. of Paſſau.

ORTH, a town of Germany, in Auſtria.

ORTHAGORAS, an ancient author, who wrote an account of India. *Ælian.*

ORTHAMPELOS, a ſpecies of vine, that is capable of ſupporting itſelf.

ORTHES, or ORTHEZ, a city of France, in the dep. of the Lower Pyrenees, and late province of Bearn. The cathedral is a wretched edifice, very ancient, built in a barbarous ſtyle, and almoſt in ruins. The remains of the caſtle are very noble, and its ſituation is fine, on a hill, which commands the town and a great extent of country. The people call it *Le Chateau de la Reine Jeanne*, becauſe that queen reſided in it during many years, in preference to the caſtle of Pau. Some of the apartments, though in ruins, may yet be entered. The princeſs Blanche, daughter to John king of Arragon and Navarre, was ſhut up, and died here, in 1464. It is 20 miles NW. of Pau, and 30 E. of Bayonne. Lon. 0. 24. W. Lat. 43. 5. N.

ORTHIA, a ſurname of DIANA, derived from a moſt barbarous piece of ſuperſtition. See DIAMASTIGOSIS.

ORTHMANZDORF, a town of Upper Saxony, in Erzgeburg; 4 miles ESE. of Zwickau.

ORTHOCERATITES, a ſpecies of foſſile ſhells. See *Plate* CCLXI.

ORTHOCOLON, *n. ſ.* in ſurgery, the preternatural ſtraightneſs of a joint. *Aſh.*

ORTHODORON, an ancient meaſure of length, ſhorter by a finger's breadth than a ſpan.

* ORTHODOX. } *adj.* [ὀρθος and δοκεω; *or-*
* ORTHODOXAL. } *thodox*, French.] Sound in opinion and doctrine; not heretical. *Orthodoxal* is not uſed.—Be you perſuaded and ſettled in the true proteſtant religion profeſſed by the church of England; which is as ſound and *orthodox* in the doctrine thereof, as any Chriſtian church in the world. *Bacon.*—An uniform profeſſion of one and the ſame *orthodoxal* verity, which was one given to the ſaints. *White.*—Eternal bliſs is not immediately ſuperſtructed on the moſt *orthodox* belief. *Hammond.*—Origen and the two Clemens's, their works were originally *orthodox*, but had been afterwards corrupted. *Waterland.*

* ORTHODOXLY. *adv.* [from *orthodox.*] With ſoundneſs of opinion.—The doctrine of the church of England, expreſſed in the 39 articles, is ſo ſoundly and ſo *orthodoxly* ſettled, as cannot be queſtioned. *Bacon.*

ORTHODOXNESS, *n. ſ.* the ſtate of being orthodox. *Aſh.* See the next article.

* ORTHODOXY. *n. ſ.* [ὀρθοδοξια; *orthodoxie*, Fr. from *orthodox.*] Soundneſs in opinion and doctrine.—Baſil himſelf bears full and clear teſtimony to Gregory's *orthodoxy*. *Waterland.*—I do not attempt explaining the myſteries of the Chriſtian religion; ſince providence intended there ſhould be myſteries, it cannot be agreeable to piety, *orthodoxy*, or good ſenſe, to go about it. *Swift.*

* ORTHODROMICKS. *n. ſ.* [from ὀρθος and δρομος.] The art of ſailing in the arc of ſome great circle, which is the ſhorteſt and ſtraighteſt diſtance between any two points on the ſurface of the globe. *Harris.*

* ORTHODROMY. *n. ſ.* [ὀρθος and δρομος; *orthodromie*, French.] Sailing in a ſtraight courſe.

ORTHOEPY, *n. ſ.* a branch of proſody, comprehending the rules of pronunciation. See ENGLISH LANGUAGE, under PROSODY, p. 702; alſo ORATORY, *Part* IV.

* ORTHOGON, *n. ſ.* [ὀρθος and γωνια.] A rectangled figure.—The ſquare will make you ready for all manner of compartments; your cylinder for vaulted turrets and round buildings; your *orthogon* and pyramid, for ſharp ſteeples. *Peach.*

* ORTHOGONAL. *adj.* [*orthogonel*, Fr. from *orthogon.*] Rectangular.

* ORTHOGRAPHER. *n. ſ.* [ὀρθος add γραφω.] One who ſpells according to the rules of grammar.—He was wont to ſpeak plain, like an honeſt man and a ſoldier; and now he is turn'd *orthographer*, his words are juſt ſo many ſtrange diſhes. *Shak.*

ORTHOGRAPHIC. See next article.

(1.) * ORTHOGRAPHICAL. *adj.* [from *orthography.*] 1. Rightly ſpelled. 2. Relating to the ſpelling.—I received from him the following letter, which, after having rectified ſome little *orthographical* miſtakes, I ſhall make a preſent of to the public. *Spectator.* 3. Delineated according to the elevation, not the ground-plot.—In the *orthographical* ſchemes there ſhould be a true delineation and the juſt dimenſions of each face, and of what belongs to it. *Mortimer's Huſbandry.*

(2.) ORTHOGRAPHICAL PROJECTION OF THE SPHERE, that wherein the eye is ſuppoſed to be at an infinite diſtance; ſo called, becauſe the perpendiculars from any point of the ſphere will all fall in the common interſection of the ſphere with the plane of the projection. See GEOGRAPHY and PROJECTION.

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* ORTHOGRAPHICALLY. *adv.* [from *orthographical.*] 1 According to the rules of ſpelling. 2. According to the elevation.

ORTHOGRAPHIST. *n. ſ.* an orthagrapher. *Aſh.*

To ORTHOGRAPHIZE, *v. n.* To practiſe the rules of orthography. *Aſh.*

(1.) ORTHOGRAPHY. *n. ſ.* [ὀρθος and γραφω, *orthographie*, Fr.] 1. The part of grammar which teaches how words ſhould be ſpelled.—This would render languages much more eaſy to be learned, as to reading and pronouncing, and eſpecially as to the writing them, which, now as they ſtand, we find to be troubleſome, and it is no ſmall part of grammar which treats of *orthography* and right pronunciation. *Holder.* 2. The art or practice of ſpelling.—In London they clip their words after one manner about the court, another in the city, and a third in the ſuburbs; all which reduced to writing, would entirely confound *orthography*, *Swift.* 3. The elevation of a building delineated. —You have the *orthography* or upright of this ground-plat. *Moxon.*

(2.) ORTHOGRAPHY is that part of grammar which teaches the nature of letters, and is one of the four great diviſions of grammar. See GRAMMAR under ENGLISH LANGUAGE, Page 686—691.

(3.) ORTHOGRAPHY, in geometry, the art of drawing or delineating the fore right plan of any object, and of expreſſing the heights or elevations of each part. It is called *Orthography*, for its determining things by perpendicular lines falling on the geometrical plane.

(4.) ORTHOGRAPHY, in perſpective, is the fore right ſide of any plane, *i. e.* the ſide or plane that lies parallel to a ſtraight line, that may be imagined to paſs through the outward convex points of the eyes, continued to a convenient length.

ORTHOMETRY, *n. ſ.* a branch of PROSODY, comprehending the laws of verſification. See p. 702.

(1.) * ORTHOPNOEA. *n. ſ.* [ὀρθοπνοια; *orthopnée*, Fr.] A diſorder of the lungs, in which reſpiration can be performed only in an upright poſture.—His diſeaſe was an aſthma oft turning to an *orthopnœa*. *Harvey on Conſumptions.*

(2.) ORTHOPNOEA is a ſpecies of aſthma, where there is ſuch a difficulty of reſpiration, that the patient is obliged to ſit or ſtand upright in order to be able to breathe. See MEDICINE, § 872, 875.

ORTHOS. See ORTHUS.

ORTHOSIA, a town of Caria. *Liv.* 45. c. 25.

ORTHOSTATÆ. *n. ſ.* Pilaſters, buttreſſes, or ſupporters of a building. *Bailey.*

ORTHUS, in the mythology, a dog which had two heads. He was the ſon of Typhon and Echidna, and the brother of CERBERUS and the HYDRA. He was kept by GERYON, and killed along with him, by Hercules.

ORTI, a town of Italy, in Patrimonio, and a biſhop's ſee united to Caſtellana, 30 miles NW. of Rome, and 12 E. of Viterbo.

ORTIAGON. See CHIOMARA.

ORTIBARIO, a town of France, in the department and iſland of Corſica, 12 miles S. of Pellegrino.

(1.) * ORTIVE. *adj.* [*ortive*, Fr. *ortivus*, Lat.] Relating to the riſing of any planet or ſtar.

(2.) ORTIVE, in aſtronomy, is the ſame with EASTERN. The ortive or eaſtern amplitude, is an arch of the horizon intercepted between the place where a ſtar riſes, and the eaſt point of the horizon, or point where the horizon and equator interſect.

ORTNAU. See ORTENAU.

ORTO, a town of Hami, 50 miles W. of Hami.

(1.) * ORTOLAN. *n. ſ.* [French.] A ſmall bird accounted very delicious.—

Nor *ortolans* nor godwits. *Cowley.*

(2.) ORTOLAN. See EMBERIZA, N° 2.

ORTON, a town of Weſtmoreland, with a market on Wed. 12 miles SW. of Appleby, 14 NNE. of Kendal, and 271 NNW. of London. Lon. 2. 40. W. Lat. 54. 28. N.

(1.) ORTONA, or ARTONA, an ancient town of Latium which was taken by the Æqui. Liv. ii. c. 43.

(2.) ORTONA A MARE, a ſea port and biſhop's ſea of Naples, in Abruzzo Citra; 13 miles E. of Chieti.

ORTOSTA, a town of Sweden, in Schonen.

ORTRAND, a town of Saxony, in Meiſſen.

* ORTS. *n. ſ.* ſeldom with a ſingular. [This word is derived by *Skinner* from *ort*, German, the *fourth part of any thing*; by Mr *Lye* more reaſonably from *orda*, Iriſh, a fragment. In Anglo Saxon, *ord* ſignifies the beginning; whence in ſome provinces *odds* and *ends*, for *ords* and *ends* ſignify remnants, ſcattered pieces, refuſe; from *ord* thus uſed probably came *ort*.] Refuſe; things left or thrown away. Obſolete —

A barren-ſpirited fellow, one that feeds
On abject *orts* and imitations. *Shak. J Cæſar.*
The fractions of her faith, *orts* of her love.
Shak.
Brave pluſh and velvet men
Can feed on *orts*. *Ben Jonſon.*

(1.) ORTYGIA, the birth place of Diana, was a beautiful grove of trees of various kinds, chiefly cypreſſes, near Epheſus; on the coaſt, a little up from the ſea. This place was filled with ſhrines and images. The prieſts of the goddeſs were eunuchs, and exceedingly reſpected by the people. A general aſſembly was held there yearly, and ſplendid entertainments were provided, and myſtic ſacrifices ſolemnized. The Cenchrius, ran through it; and above it was the mountain Solmiſſus, on which it was fabled the Curetes ſtood, and rattled on their ſhields, to divert the attention of Juno. Not only the birth-place of Diana and its ſanctity are forgotten, but the grove and buildings which adorned it appear no more; and perhaps, ſays Dr Chandler, the land has encroached on the ſea, and the valley in which *Arvifia* is was once Ortygia. See DIANA, & EPHESUS.

(2.) ORTYGIA, an iſland of Sicily, in the bay of Syracuſe, which formed one of the 4 great quarters of that great city. In this iſland the celebrated fountain Arethuſa aroſe. (See ARETHUSA, N° 3.) Ortygia is now the only remaining part of the once famed SYRACUSE, about 2 miles in circumference, and inhabited by 18,000 ſouls. It has ſuffered much by the eruptions of Ætna. *Lempriere.* *Virg. Æn.* iii. 694.

(3.) ORTYGIA, a ſurname of Diana.

ORTYGIUS, a ſurname of Apollo.

ORTZA, a fortified town of Lithuania, in Witepſk,

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Witepſk, with a ſtrong caſtle, at the conflux of the Dnieper and Oreſa, 50 miles W. of Smolenſko. Lon. 30. 0. E. Lat. 54. 45. N.

ORUA. See ARUBA.

* ORVAL. *n. ſ.* [*orvale*, Fr. *orvala*, Lat.] The herb clary. *Dict.*

ORUBA, or ARUBA. See ARUBA.

* ORVIETAN. *n. ſ.* [*orvietano*, Italian; ſo called from a mountebank at Orvieto in Italy.] An antidote or counter poiſon; a medicinal compoſition or electuary, good againſt poiſon. *Bailey.*

ORVIETANO, a territory of Italy, in patrimonio, belonging to the Pope, about 20 miles long, and from 10 to 15 broad.

ORVIETO, the capital of ORVIETANO, is a large ſtrong city, ſituated at the conflux of the Paglia and the Chiana on a ſteep hill, ſurrounded on every ſide with rocks and precipices. To this ſituation it is owing that it has no ſprings; but there is a very ſurpriſing well cut into the rock, to ſupply it with freſh water. The mules which bring up the water on their backs, go down by a ſtair caſe of 150 ſteps, and 66 windows, and come up by another, without meeting. The architect of this ſingular building was the famous Antony da San Gallo, employed by Clement VII. This city, called *Herbanum* by Pliny, and URBEVETANUM by Procopius, is the ſee of a biſhop ſuffragan of Rome. The cathedral is a fine Gothic building, adorned with ſculpture and painting, begun in 1260 by Nicolas Piſano. Orvieto was once a potent and populous city, but is now much upon the decline. It lies 20 miles NW. of Viterbo, 50 NNW. of Rome, and 73 SSE. of Florence. Lon. 12. 20. E. Lat. 42. 50. N.

ORVILLE, James Philip, a learned critic, born at Amſterdam, of French parents, in 1696. He travelled into England, France, and Germany; and on his return in 1730, he was made profeſſor of hiſtory, eloquence, and Greek; but reſigned in 1742. He wrote ſeveral learned diſſertations, in the *Obſervationes Miſcellaneæ*, a work of deep erudition. He died in 1743.

ORUM, a town of Denmark, in N. Jutland.

ORURO, a province or juriſdiction of S. America, in Buenos Ayres. The climate is ſo cold that few eſculent vegetables thrive in it, but it produces paſture for numerous herds of cattle, and has rich mines of gold and ſilver; though the working of the latter has been lately ſtopt by an influx of the water. St Philip is the capital, and lies 90 miles from La Plata.

ORUS. See HORUS, N° 1. and MYTHOLOGY, § 29.

ORWEL, or } a pariſh of Scotland, in Kin-
(1.) ORWELL, } roſs-ſhire, called alſo *Millnathort*, from its chief village; which lies in its centre, on the great road to Perth, 16 miles N. of N. Queensferry, and 14 S. of Perth. The pariſh is 5½ miles long from E. to W. and 5 broad. The ſurface is nearly level, and abounds with excellent paſture; the air is very ſalubrious; the ſoil is partly light ſand, partly ſand and clay; but very fertile, and the crops early, of all the uſual grain. The total annual value of theſe is eſtimated at 11,562l. There are 4 quarries of excellent freeſtone. The population, in 1794, was 1705; the decreaſe 186, ſince 1755. The number of ſheep was 2280; of horſes, 425; and black cattle, 2040. The total extent of ground is 16,384 Scots acres. The ruins of *Burleigh Caſtle*, with walls 10 feet high, are ſtill viſible; ſurrounded by large trees, many of them hollow with age; particularly one called *Burleigh's Hole*, from Lord Burleigh's concealing himſelf in it from juſtice, after he had murdered the ſchoolmaſter for marrying his favourite female ſervant, without his conſent.

(2.) ORWELL, a river of England, which riſes in the middle of Suffolk, where it is called *Gipping*; paſſes by Stow, Needham, and Ipſwich, where it is named *Ipſwich Water*, and, uniting with the STOUR from Manningtree, forms the fine harbour of Harwich. See HARWICH, N° 1.

(3.) ORWELL, a river of the United States, which runs into Lake Erie; in Lon. 80. 30. W. Lat. 43. 0. N.

(4.) ORWELL, a townſhip of Vermont, in the NW. of Rutland county, on the E. bank of Lake Champlain. It had 778 citizens in 1795.

(1.) ORYX, an ancient town of Arcadia, ſeated on the Ladon. *Pauſan.* viii. c. 25.

(2.) ORYX, in Zoology. See CAPRA, N° VIII.

ORYZA, RICE, in botany, a genus of the digynia order, belonging to the hexandria claſs of plants; and in the natural method ranking under the 4th order, *Gramina*. The calyx is a bivalved uniflorous glume; the corolla bivalved, nearly equal, and adhering to the ſeed. There is but one ſpecies, viz.

ORYZA SATIVA, common rice. This plant is greatly cultivated in moſt of the eaſtern countries, where it is the chief ſupport of the inhabitants; and great quantities of it are brought into England and other European countries every year, where it is much eſteemed for puddings, &c. but is too tender to be produced in theſe northern countries without the aſſiſtance of artificial heat. It grows upon moiſt ſoils, where the ground can be flowed over with water after it is come up. So that whoever would cultivate it in this country ſhould ſow the ſeeds upon a hot-bed; and when the plants are come up, they ſhould be removed into pots filled with light rich earth, and placed in pans of water, which ſhould be plunged into a hot-bed; and, as the water waſtes, it muſt from time to time be renewed. In July theſe plants may be ſet abroad in a warm ſituation, ſtill preſerving the water in the pans, otherways they will not thrive; and, toward the end of Auguſt, they will produce their grain, which will ripen tolerably well, provided the autumn proves favourable. The leaves of rice are long, like the reed, and fleſhy; the flowers blow on the top like barley: but the ſeed which follows is diſpoſed in cluſters, each of which is incloſed in a yellow huſk, ending in a ſpiral thread. The ſeed is oblong, or rather oval, and white. Rice is the chief commodity and riches of Damietta in Egypt. Dr Haſſelquiſt gives the following deſcription of the manner in which the Egyptians dreſs and ſeparate it from the huſks: "It is pounded by hollow iron peſtles of a cylindrical form, lifted up by a wheel worked by oxen. A perſon ſitting between the two peſtles, puſhes forward the rice when the peſtles are riſing; another ſifts, winnows, and lays it under the peſtles. In this manner they

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continue working it until it is entirely free from chaff and husks. When clean, they add a 30th part of salt, and pound them together; by which the rice, formerly grey, becomes white. After this purification, it is passed through a fine sieve to part the salt from the rice; and then it is ready for sale." Damietta sells 60,800 sacks of rice annually, the greatest part of which goes to Turkey, some to Leghorn, Marseilles, Venice.

ORYZIVORA, the RICE BIRD of Catesby, a species of Emberiza. It is about the size of a sparrow, being 6¾ inches long. See EMBERIZA, N° 5.

(1.) ORZI, a territory of Italy, in the department of the Mella, district and late duchy of Brescia; containing four parishes, and 4000 citizens.

(2.) ORZI, or ORCI, the name of two towns in Italy, in the department of the Mella, and district of Brescia, (ci-devant Bresciano,) thus distinguished:

1. ORZI NOVI, or } *i.e.* NEW ORZI, a fortified
1. ORZI NUOVO, } town on the Oglio, containing 3000 citizens, besides 1000 in its suburbs, and 4 parishes; 15 miles SW. of Brescia.

2. ORZI VECCHIO, or OLD ORZI, 14 miles SW. of Brescia.

(1.) OS, [Lat.] A bone. See ANATOMY, *Index*.

(2.) OS, or OSS, in geography, a town of Holland, in the dep. of the Dommel and Scheldt, and late prov. of Dutch Brabant; 10 miles NE. of Bois le Duc.

(1.) OSA, a town of Russia, in Perm, on the Kama.

(2.) OSA DE LA VEGA, a town of Spain, in Castile.

OSACA, a flourishing commercial town of Japan, in Niphon; with a magnificent castle and harbour. Lon. 133. 45. E. Lat. 35. 20. N.

(1.) OSAGES, a river of Louisiana, which runs E. into the Missouri.

(2.) OSAGES, a nation of N. American Indians, who inhabit the S. banks of the Missouri. They have 400 warriors.

OSAPY. See OSSIPEE.

OSBECKIA, in botany, a genus of plants, of the monogynia order, belonging to the octandria class; and, in the natural method, ranking under the 17th order, *Calycanthemæ*.

(1.) OSBORN, Francis, an eminent English writer in the 17th century. He frequented the court, and was master of the horse to William earl of Pembroke. Upon the breaking out of the civil wars, he adhered to the parliament, and had several public employments conferred upon him. In the latter part of his life, he lived at Oxford, in order to print several books, and to look after his son, for whom, by the favour of the parliament, he procured a fellowship in All Souls college. His *Advice to a son*, so soon as it was published, being complained of to Dr John Tenant, vice-chancellor of Oxford, as of irreligious tendency, there was a propofal made to have it publicly burnt; but that taking no effect, it was ordered that no bookseller or others should sell it, which only made it sell the faster. He wrote also *Historical Memoirs of the reigns of queen Elizabeth and king James I.*; a Discourse on the greatness and corruption of the church of Rome; a Discourse upon Machiavel, &c. He died in 1659.

(2.) OSBORN, a town of Wight, in E. Medina.

OSCAR, the son of Ossian. See OSSIAN.

OSCARI, a town of Sardinia.

OSCAR'S ISLAND, called by Buchanan *Moloch-Oscair*, an island of Argyllshire, W. of Ramasa, in a fine bay called *Lochoscair*, where vessels of any burden may ride safely.

OSCASALO, a town of Italy in the depart. of the Upper Po, and district of Cremona, (late Cremonese), on the Canal of Oglio, in a fertile territory.

OSCELLO. See OSSOLA.

OSCHA, a river of Russia, which runs into the Irtisch, opposite Malanova, in bolsk.

OSCHATZ, a town of Saxony, in Meissen.

* OSCHEOCELE, *n. f.* [ὀσχεον and κηλη.] A kind of hernia, wherein the intestines break into scrotum. *Dict.*

OSCHERSLEBEN, a town of Lower Saxony, in Halberstadt, 10 miles NE. of Halberstadt, and 20 W. of Magdeburg.

OSCHOPHORIA, a festival observed by the Athenians. It receives its name ἀπο του φερειν τας ὀσχας, from carrying boughs hung up with grapes, called ὀσχαι. Its original institution is thus mentioned by *Plut. in Thes.* Theseus, on returning from Crete, forgot to hang out the white sail, by which his father was to be apprized of his success. This neglect proved fatal to Ægeus, for he threw himself into the sea, and perished. Theseus no sooner reached the land, than he sent a herald to inform his father of his safe return, and in the mean time he began to make the sacrifices which he had vowed to make when he first set sail from Crete. The herald, on his entrance into the city, found the people in great agitation. Some lamented the kings death, while others, elated at the sudden news of the victory of Theseus, crowned the herald with garlands in token of their joy. The herald carried back the garlands on his staff to the sea shore; and, after waiting till Theseus had finished his sacrifice, he related the melancholy account of the king's death. Upon this the people ran in crowds to the city, showing their grief by cries and lamentations.—From this circumstance, therefore, at the feast of Oschophoria, not the herald, but his staff was crowned with garlands, and all the people that were present exclaimed ελελευ, ευ, ευ, the first of which expresses haste, and the others a consternation or depression of spirits. The historian further mentions, that Theseus, when he went to Crete, did not take with him the usual number of virgins, but that in the place of two of them, he took two youths of his acquaintance, whom he caused to pass for women, by disguising their dress, and by accustoming them to the ointments and perfumes of women, as well as by a long and successful imitation of their voice. The imposition succeeded; their sex was not discovered in Crete; and when Theseus had triumphed over the Minotaur, he, with these two young men led a procession, with branches in their hands, in the same habit, which was still used at the celebration

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tion of the festival. The branches which were carried were in honour of Bacchus and Ariadne, or because they returned in autumn, when the grapes were ripe. Besides this procession, there was also a race in which young men only, whose parents were both alive, were permitted to engage. It was customary for them to run from the temple of Bacchus to that of Minerva, which was on the sea-shore. The place where they stopped was called ὀσχοφόριον, because the boughs which they carried in their hands were deposited there. The reward of the conqueror was a cup called πεντάκλων, *five-fold*, because it contained a mixture of five different things; wine, honey, cheese, meal, and oil.

OSCI, an ancient people of Italy, who dwelt between Campania and the country of the Volsci, and assisted Turnus against Æneas. *Tacit. Ann.* iv. c. 14.

OSCILLA, small images of wax or clay made in the shape of men or women, and consecrated to Saturn, to render him propitious. The word is sometimes used to signify a kind of masks scooped from the bark of trees, and worn by the performers of comedy in the ruder ages of Rome. In this sense we find it in Virg. Geo. ii. 386. It also signifies little heads or images of Bacchus, which the countrymen of old hung upon trees, that the face might turn every way, out of a notion that the countenance of this god gave felicity to themselves, and fertility to their vineyards. An allusion to this opinion and custom is also found in Virgil, Geo. ii. 388.

* OSCILLATION. *n. s.* [*oscillum*, Latin.] The act of moving backward and foreward like a pendulum.

* OSCILLATORY. *adj.* [*oscillum*, Lat.] Moving backwards and forwards like a pendulum.—The actions upon the solids are stimulating or increasing their vibrations, or *oscillatory* motions. *Arbuthnot.*

* OSCITANCY. *n. s.* [*oscitantio*, Lat.] 1. The act of yawning. 2. Unusual sleepiness; carelessness.—If persons of circumspect piety have been overtaken, what security can there be for our wreckless *oscitancy? Gov. Ton.*—It might proceed from the *oscitancy* of transcribers, who, to dispatch their work the sooner, used to write all numbers in cyphers. *Spectator.*

* OSCITANT. *adj.* [*oscitans*, Latin.] 8. Yawning; unusually sleepy. 2. Sleepy; sluggish.—Our *oscitant* lazy piety gave vacancy for them. *Decay of Piety.*

* OSCITATION. *n. s.* [*oscito*, Lat.] The act of yawning.—I shall defer considering this subject till I come to my treatise of *oscitation*, laughter, and ridicule. *Tatler.*

OSCIUS, a hill and river of Thrace.

OSEN, a town of Norway, in Drontheim.

OSENEY ISLAND, an island of England, formed by the Isis, in the meadows near Oxford, where a magnificent abbey was erected, at the instigation of a concubine of King Henry I. to atone for her sins. He also built a palace there, wherein King Richard I. was born, and which Edward II. converted into a monastery.

OSENOKA, a river of Russia, which runs into the Kolima, in Lon. 166° E. of Ferro. Lat. 64. 15. N.

OSER, a river of Russia, running into the Oka, 20 miles NW. of Riazan.

(1.) OSERO, or OSORO, an island in Dalmatia, separated by a narrow channel from Cherso, on the N. so that the two isles being joined by a bridge, appear but as one, and are accordingly ranked as *one* of the *Four Islands* of the Quarnaro. See CHERSO, N° 1.; and QUARNARO. It is 15 miles long, and from 2 to 5 broad. The surface of the two hills is hilly, and the soil stony, yet it produces pasture for 70,000 sheep, as well as corn, vines, orange, fig, and olive trees. The oil is esteemed of the best quality, and about 4000 barrels of it are annually exported; besides 300 casks of wine, figs to the amount of 400 zechins, and vast quantities of brandy, wool, fish, masstich, medicinal herbs, and fire-wood. The population of Cherso and Oseno is about 11,000, and the people are very industrious. Cherso, the capital, has a cathedral; and there are 100 chapels. These islands were anciently called ABSYRTIDES. (See that article.) They contain 52 towns and villages.

(2.) OSERO, the capital of the above island, the ancient ABSYRTIUM, is but a small, though very ancient town, containing about 350 inhabitants, with a rich and splendid church, "part of the revenues of which (says Dr. Oppenheim) should be applied to the relief of the inhabitants and the improvement of the town." It is a bishop's see, and built on a head-land, in the form of a triangle. Lon. 15. 30. E. Lat. 45. 0. N.

OSEY ISLAND, an island of England, in Blackwater Bay, near Malden in Essex, which abounds with numerous flocks of wild fowls. The coal ships for Malden unload their cargoes at its harbour.

(1.) OSIANDER, Adam, chancellor of the University of Tubingen, published a work entitled *Theologia Causalis; a System of Casual Theology*; containing the solution of dubious questions and *cases* of conscience; 6 vols. 4to, Tubingen, 1682.

(2.) OSIANDER, Andrew, a Lutheran divine, born in Bavaria, in 1498. He studied at Wirtemberg, and became professor of theology at Konigsberg. He denied the doctrine of imputed righteousness, which gave rise to a controversy between him and other Lutheran divines. He died in 1552.

OSICA, a town of Poland, in Sandomirz.

(1.) * OSIER. *n. s.* [*osier*, Fr. *vitex.*] A tree of the willow kind, growing by the water; of which the twigs are used for basket-work.—

The rank of *osiers*, by the murmuring stream. *Shak.*

I must fill up this *osier* cage of ours. *Shak.*

Car comes crown'd with *osier*. *Drayton.*

Bring them for food sweet boughs and *osiers* cut. *May's Virgil.*

Like her no nymph can willing *osiers* bend. *Dryden.*

We made the *osier*-fringed bank our bed. *Pope.*

(2.) OSIER, in botany. See SALIX.

OSIMO, an ancient town of Italy, in Ancona, with a bishop's see and magnificent palace; seated on the Musone, 10 miles S. of Ancona, and

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and 116 NE. of Rome. Lon. 13. 34. E. Lat. 43. 29. N.

OSIO, a town of Sweden, in E. Gothland.

OSIRIS, in mythology, one of the gods of ancient Egypt, and generally ſuppoſed to mean the ſun, or the mind actuating that luminary. Macrobius ſays, that in the hieroglyphic writings of ancient Egypt, "Oſiris was repreſented by a ſceptre and an eye," to denote that this god was the *ſun* looking down from heaven on all things upon earth. Some of the ancients, however, and a few of the moſt learned moderns, have contended, that by *Oſiris* the Egyptians underſtood the Nile, or ſpirit of the Nile, whilſt others have confounded him with the Grecian Bacchus. But that they are all miſtaken, has been evinced by Jablonſki in ſuch a manner as to enforce the fulleſt conviction. But though the original Oſiris was undoubtedly the ſun, or the intelligence actuating the ſun, yet there was a *ſecondary Oſiris*, who was ſaid to be the founder of the Egyptian monarchy; and, as was cuſtomary in thoſe days, having either received the name of the ſun, or communicated his own to that luminary, was after his death deified for the benefits which he had rendered to his country; and being at firſt worſhipped only as a demigod, was in proceſs of time advanced to full divinity, and confounded with his heavenly godfather. The Greeks, who, though original in nothing, were always prompted by their vanity to hold themſelves out as the firſt of the nations, claimed this Oſiris as their own, and pretended that he was the ſon of Jupiter and Niobe. See MYSTERIES, § 20—26.

OSISMII, an ancient people of Gaul, who inhabited the country ſince called BRITTANY. *Cæſ. de Bel. Gal.* ii. c. 34.

OSIUS, FELIX, a learned writer, who was profeſſor of rhetoric at Padua, and publiſhed ſeveral works, of which the principal was his *Romano-Græcia*. He died in 1631.

(1.) OSKOL, a river of Ruſſia, which runs into the Donetz, near Izium, in Charkow.

(2.) OSKOL, a town of Ruſſia, in Kurſk.

OSKOVA, a mountain of Boſnia.

OSMA, a town of Spain, in Old Caſtile, with a biſhop's ſee and an univerſity, on the Duero, 80 miles N. by E. of Madrid. Lon. 2. 14. W. Lat. 41. 30. N.

OSMAN I. or OTHMAN I. emperor of the Turks; ſucceeded his uncle Muſtapha I. who was depoſed in 1618. He marched againſt the Poles in 1621, with a great army, but being repeatedly defeated, concluded a diſadvantageous peace, and returned home; where he was depoſed by the janizaries, and Muſtapha reſtored, who cauſed him to be ſtrangled.

OSMAN II. ſucceeded his brother Mahomet V. in 1754, and died in 1757, aged 59. See TURKEY.

OSMANSUK, a town of Turkey, in Caramania, 70 miles E. of Tocat.

OSMITES, in botany, a genus of plants, of the ſyngeneſia claſs, and polygamia fruſtanea order, and in the natural method ranking under the 49th order, *Compoſitæ*.

OSMORSKOI, a town of Ruſſia, in Kolivan, on the Irtiſch, 200 miles WSW. of Kolivan.

(1.) * OSMUND. *n. ſ.* A plant. It is ſometimes uſed in medicine. It grows upon bogs in divers parts of England. *Miller.*

(2.) OSMUND, } in botany, MOONWORT; a ge-
OSMUNDA, } nus of the order of filices, belonging to the cryptogamia claſs of plants. There are ſeveral ſpecies; the moſt remarkable is the

OSMUNDA REGALIS, oſmund royal, or FLOWERING FERN. This is a native of Britain, growing in putrid marſhes. Its leaf is doubly winged, bearing bunches of flowers at the ends. The root boiled in water is very ſlimy; and is uſed in the north to ſtiffen linen, inſtead of ſtarch. Some of the leaves only bear flowers.

OSNABRUCC, or } a biſhopric of Germany,
(1.) OSNABURG, } ſituated in the centre of the circle of Weſtphalia, between the Weſer and the Ems, having Minden on the E. Munſter on the W. Diepholt on the NE. and Ravenſburg on the SW. It is about 45 miles long, and 25 broad, producing rye and good paſturage, and affording ſeveral ſorts of turf, coals, and marble. The inhabitants, who are a mixture of Proteſtants and Roman Catholics, breed a conſiderable number of cattle, eſpecially hogs, but a great part of the country conſiſts of heaths. By the treaty concluded here in 1648, the biſhopric was to be an alternative between the Roman Catholics and Lutherans; and the Lutheran biſhop was to be a younger prince of the houſe of Bruſwic Lunenburg, or, on failure thereof, of Bruſwic Wolfenbuttle. In conſequence of this ſettlement, it has been twice held by a Britiſh prince ſince the acceſſion of the family of Hanover. The biſhop is able to raiſe 2500 men, his revenue being between 20,000 and 30,000l. The chief manufactures are a coarſe kind of linen cloth and yarn, which are ſaid to bring into it annually about 1,000,000 of rix-dollars. There are alſo ſome woollen manufactures in Oſnaburg and Bramſche. The land eſtates of the biſhopric are, the chapter, the knights, and the four towns. The diets are held at Oſnaburg, when called together by the biſhop. The count of Bar is hereditary ſeneſchal or ſteward, and preſident of the college of knights. The biſhop is a prince of the empire; and in the matricula is rated at 6 horſe and 36 foot, or 216 florins monthly, in lieu of them. This principality is now annexed to Weſtphalia.

(2.) OSNABURG, or OSNABRUCK, the capital of the above biſhopric. It was formerly an imperial city, and one of the Hanſe towns; but is now ſubject to the biſhop, though it ſtill enjoys many privileges, and a revenue of about 8000 or 9000 rixdollars. It has its name from a bridge over the river Oſe, which divides it into the Old and New Town, and ſtands 75 miles W. of Hanover, and 30 NE. of Munſter, being ſurrounded with walls and ditches, but commanded by a mountain with cannon ſhot. It ſtands in a fine plain, and is adorned with ſeveral good buildings, and on the mountain there is an abbey. The magiſtracy, which is choſen yearly on the 2d Jan. is Lutheran; and the churches belong, ſome to the Lutherans, and ſome to the papiſts. Both parties have the free exerciſe of their religion, whether the biſhop be Proteſtant or Papiſt. The

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biſhop's palace, called *Peterſburg*, was built by Biſhop Erneſt Auguſtus, brother to King George I. It is well fortified, and ſeparated from the town by a bridge. In the treaſure of the cathedral are ſtill to be ſeen ſome ornaments given by Charlemagne, as alſo his crown, which is of ſilver gilt, and his comb and batoon, ſix feet in length, both of ivory; with other curioſities. Charlemagne erected here a ſchool for Latin and Greek, which the Jeſuits, in 1625, converted into an academy. They have the beſt bread and beer in Weſtphalia, and have a good trade in bacon and linen, and in a palatable thick ſort of beer called *buſe*. This city is famous for a treaty betwixt the emperor and the king of Sweden in 1648, wherein the affairs of the Proteſtants were regulated, which was a branch of the treaty of Weſtphalia. The town, with the reſt of the principality, is ſubject to its biſhop, who is a count of the empire. The cathedral is in the hands of the Roman Catholics, with the church and monaſtery of the Dominicans in the old city, and the collegiate church of St John in the new. The Proteſtants are maſters of the great parochial church of St Mary in the old city; and both religions have a voice in the election of the magiſtrates. Of 25 canons belonging to the cathedral, 18 are Roman Catholics, and the revenues of 4 more are enjoyed by the Jeſuits for the ſupport of their college; ſo that there are but 3 Proteſtant canons, who have no voice in the election of the Roman Catholic biſhop, when it is his turn to ſucceed. The biſhopric is ſituated in the centre of the circle; the north part of it is marſhy, but at the ſouth extremity of it are ſome mountains. The inhabitants have conſiderable manufactures of linen, and a good breed of cattle; and of their hogs is made the beſt Weſtphalia bacon. Near this city are to be ſeen the ruins of an old church and caſtle, called *Beelem*, which was built by King Witekind, upon his converſion; and about two miles from it lies the monaſtery of Rulle, on the bank of a lake. This was the firſt town in Weſtphalia which received the Lutheran doctrine. It is ſeated on the Haze, 35 miles NE. of Munſter, and 75 W. of Hanover. Lon. 8. 20. E. Lat. 52. 24. N.

(3.) OSNABURG ISLAND, or MARTEA, an iſland in the South Sea, diſcovered by Captain Wallis in 1767; and viſited by Captain Cook in 1769. The natives are humane and well clothed. It is a high round iſland, not above 3 miles in circuit; in ſome parts covered with trees, in others naked. Lon. 147. 30. W. Lat. 17. 51. S.

(4.) OSNABURG ISLAND, another iſland in the South Sea, diſcovered by Capt. Carteret, in 1767. Lon. 141. 34. W. Lat. 22. 48. S.

OSOKOLSKO, a town of Ruſſia, in Archangel, on the Mezen; 104 miles ENE. of Archangel.

OSOLA, a town of Sardinia.

OSONA, a town of Spain, in Catalonia, anciently called AUSA and AUSONA.

OSONALA, a town of Naples, in Abruzzo Ultra; 10 miles ESE. of Aquila.

OSOPO, an ancient caſtle in the province of Friuli and territory of Monfalcono, one mile in circuit, 80 feet high, and well fortified.

OSORIO, or } Jerom, was born of a noble
(1.) OSORIUS, } family at Liſbon, 1500. He was eduated at the univerſity of Salamanca, and afterwards ſtudied at Paris and Bologna. On his return to Portugal he gradually roſe to the biſhopric of Sylves, to which he was appointed by Catherine of Auſtria, regent in the minority of Sebaſtian. At the requeſt of cardinal Henry of Portugal, he wrote his Hiſtory of King Emanuel, and the Expedition of Gama; which his great contemporary Camoens made at the ſame time the ſubject of his immortal Luſiad. Oſorius uſed many arguments to diſſuade Sebaſtian from his unfortunate expedition into Africa, and felt ſo deeply the miſeries which befel the Portugueſe after that fatal event, that his grief accelerated his death. He expired in 1580.—His various works were publiſhed at Rome in 1592, by his nephew, in 4 vols folio.

(2.) OSORIUS, Jerome, nephew of the preceding, was alſo a man of letters. He was canon of Evora, and wrote the life of his uncle, and ſeveral theological works.

OSORNO, a town of Chili, on the Bueno, in a territory abounding with gold mines, 80 miles S. of Valdivia, as Brookes ſays; or, as Cruttwell has it, 40 miles SE. of that city. Lon. 73. 20. W. Lat. 40. 58. S.

OSORO. See OSERO, N° 1, and 2.

OSPHAGUS, a river of Macedonia. *Liv.* 31. 19.

(1.) * OSPRAY. *n. ſ.* [corrupted from *oſſifraga*, Lat.] The ſea-eagle, of which it is reported, that when he hovers in the air, all the fiſh in the water turn up their bellies, and lie ſtill for him to ſeize which he pleaſes. *Hanmer.*—

I think he'll be to Rome,
As is the *oſpray* to the fiſh who takes it,
By ſovereignty of nature. *Shak.*

—Among the fowls ſhall not be eaten, the eagle, the oſſifrage, and the *oſpray*. *Numb.* xi. 13.

(2.) OSPRAY, or } See FALCO, N° 13.
(2.) OSPREY. }

OSS, or Os. See Os, N° 2.

(1.) OSSA, a lofty mountain of Theſſaly, near the Peneus, which runs between this mountain and Olympus; famous in fabulous hiſtory as one of thoſe which the giants piled up to facilitate their attack on heaven. (*Homer, Virgil, Horace, Seneca, Ovid.*) It was once the reſidence of the Centaurs, and was formerly joined to Mount Olympus; but Hercules ſeparated them, and made between them the celebrated valley of Tempe. Laying fable aſide, this ſeparation was probably effected by an earthquake which happened about A. A. C. 1885.

(2.) OSSA, a town of Macedonia.

(1.) OSSABAW, an iſland of the United States, near the E. coaſt of Georgia, 20 miles in circumference. Lon. 81. 17. W. Lat. 31. 42. N.

(2.) OSSABAW SOUND, a channel of the Atlantic, between Oſſabaw and Great Waſſaw.

OSSAT, Arnauld DE, born in the dioceſe of Auch in 1536, of mean parentage, was taken notice of by a gentleman in the dioceſe, who made him ſtudy with his ward, the Lord of Caſtlenau de Magnoac. He ſtudied the law at Dijon under Cujace,

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Cujace, and applied himſelf to the bar at Paris. He was ſecretary at Rome to M. de Foix, Abp. of Thouloufe; to cardinal Eſte; and afterwards to cardinal de Joyeuſe, by the French king's expreſs command. After riſing to the higheſt dignities both in church and ſtate, in 1599 he was created a cardinal by pope Clement VIII. He died in 1604. An eminent French writer gives him the following character: "He was a man of a prodigious penetration; applied himſelf ſo cloſely to affairs, and eſpecially was ſo judicious in forming his reſolutions, that it is almoſt impoſſible to find out one falſe ſtep in the many negociations in which he was concerned." His works, and eſpecially his letters, have been much eſteemed.

OSSEG, a town of Bohemia, in Leitmeritz.

* OSSELET. *n. ſ.* [French.] A little hard ſubſtance ariſing on the inſide of a horſe's knee, among the ſmall bones; it grows out of a gummy ſubſtance which faſtens thoſe bones together. *Farrier's Dict.*

OSSERBACH, a river of Upper Saxony, which runs into the Wichra, near Frohburg, in Meiſſen.

OSSETI, or Ossi, one of the Seven Nations of Mount Caucaſus. The Circaſſians and Tartars call them *Kuſha*. Their language is analogous to the Perſian.

OSSETIA, the country of the Osseti, is ſituated between the Black Sea and the Caſpian; bounded on the N. by Great Cabarda, E. by the Leſguis Tartars, S. and W. by Imeritia. It contains 19 diſtricts, of which one is ſubject to Imeritia, and the reſt to Georgia. Some of theſe contain 50 villages; others only 5. Some of theſe villages contain 100 families.

OSSI. See Osseti.

OSSIACH, a town of Carinthia, on the

OSSIACHER See, a lake of Carinthia, 4 miles long and 2 broad; 4 miles SW. of Feltkirchen, and 4 NE. of Villach.

OSSIAN, a celebrated Celtic poet, who is ſuppoſed to have flouriſhed in Caledonia, about the end of the 2d or beginning of the 3d century; of whom little elſe is known than what is contained in thoſe of his poems which were collected, tranſlated, and publiſhed by Mr Macpherſon. (See Macpherson.) He was the ſon of Fingal, who is ſaid to have commanded the Caledonians during the invaſion of Severus. (See Fingal.) It appears from his poems, that in one of his early expeditions to Ireland, Oſſian had fallen in love with and married Evirallin, daughter to Branno, petty king of Lego. This Evirallin brought him his ſon Oscar, whoſe exploits he celebrates in many of his poems, and whoſe death he laments in the firſt book of Temora. Evirallin died ſome time before Oſcar, (*Fingal*, B. iv.) who ſeems to have been her only child; and Oſſian did not marry afterwards: ſo that his poſterity ended in the death of Oſcar; who ſeems to have died as he was about to be married to Malvina, the daughter of Toſcar. This celebrated maid remained with her intended father-in-law while ſhe lived, and paid him every attention which his age demanded. It is not certain at what age Oſſian died; but from his having been long blind with years, and from the many contraſts between his preſent and paſt ſituations, in poems compoſed, as it would appear, at a conſiderable diſtance of time from each other, it is moſt likely he lived to an extreme old age. The current tradition is, that he died in the houſe of a Culdee, called the *Son of Alpin*, with whom he is ſaid to have held ſeveral conferences about the doctrines of Chriſtianity. The principal reſidence of Oſſian was in the vale of Cona, now Glenco, in Argyleſhire. See Fingal, and Monzie. His poems relate many of his expeditions to Ireland, Scandinavia, Clyde, and Tweed or Tuetha. His exploits on theſe occaſions, after making a large allowance for poetical exaggeration, ſhow him to have been no leſs a warrior than a poet. Such is the brief amount of our knowledge reſpecting Oſſian, and the authenticity even of theſe particulars has been diſputed by men of the higheſt literary eminence. As the controverſy that has ariſen on the ſubject cannot be narrated with ſufficient perſpicuity without entering more minutely into detail than our plan will allow, we ſhall avoid it entirely. Being in poſſeſſion, however, of what, from the date, may be ſaid to be the *dying* ſentiments of a man eminently qualified to judge of the queſtion in diſpute, we ſubjoin the following—Extract of a letter from Dr Hugh Blair to Mr William Moriſon, bookſeller, Perth, dated *Sunnmerfield*, 7th Oct. 1800. "That Mr M'Pherſon may not have given an exact and ſcrupulous tranſlation of all theſe poems; that he may have joined and collected ſcattered pieces into one, and have omitted ſome pieces that were in the original, is what I never called in queſtion. But that they are not poems of his compoſing, but are really and truly in the ſubſtance of them, genuine, original and antient Gaelick ſongs, well known to many natives of the Highlands, is what, from innumerable circumſtances which I had acceſs to trace, I am as fully convinced and as certain of, as I can be of any thing under the ſun."

* OSSICLE. *n. ſ.* [*oſſiculum*, Lat.] A ſmall bone. —There are three very little bones in the ear, upon whoſe right conſtitution depends the due tenſion of the tympanum; and if the action of one little muſcle, which ſerves to draw one of theſe *oſſicles*, fixt to the tympanum, be loſt or abated, the tenſion of that membrane ceaſing, ſound is hindered from coming into the ear. *Holder on Speech.*

(1.) * OSSIFICATION. *n. ſ.* [from *oſſify*.] Change of carneous, membranous, or cartilaginous, into bony ſubſtance.—*Oſſifications* or indurations of the artery, appear ſo conſtantly in the beginnings of aneuriſms, that it is not ſo eaſy to judge whether they are the cauſe or the effect of them. *Sharp.*

(2.) Ossification, in the animal œconomy, is the formation of the bones, but more particularly the converſion of parts naturally ſoft to the hardneſs and conſiſtency of bones. Bones, Dr Drake contends, are formed out of the moſt comminute or broken parts of the blood; as the blood of old men, which by a long courſe of circulation becomes in a manner unfit for the common office of nutrition, will however oſſify, and convert into bones, many of the tendons and ligaments, and even the coats of the veſſels themſelves, whoſe ſubſtance being next to the bones the moſt compact, admits only of the ſmalleſt particles of the blood, which therefore ſooneſt become oſſeous, as they are frequently found. Dr Neſbit's opinion of oſſification

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fification is, that in the blood, or a fluid ſecreted from it, there is an oſſifying juice, having particles which are not apparent: that whenever nature deſigns an oſſification between membranes, or within a cartilage, ſhe occaſions a more than uſual afflux of this fluid; which ſo much diſtends the veſſels which were before inviſible, as to make them capable of receiving the red globules of blood, which are always to be ſeen near to the place where oſſification is begun. In this blood, gritty bony particles may be felt by the point of a knife, which have been formed by the attraction and coheſion of the particles of the oſſifying juice obſtructed, along with the other groſſer fluids, in the beginning of the veſſels prepared to receive refluent juices. The blood being capable of forming fine membranes, the membranous parts of a bone, which act as a gluten to keep theſe particles and fibres together, if there be any ſuch, that do not ariſe from the coats of its veſſels, are produced by a coheſion round the cretacious particles of a part of the fluid, in which they were generated and contained. Thus the membranes of cartilages ſerve as a bed between or within which the bony particles are depoſited, or ſhoot; but without any intermixture of the particles of the bone and cartilage, or continuation of the fibres of the one ſubſtance to thoſe of the other, as is evident in cartilages containing bones kept long enough in water, and then ſlit; for the bone will, as ſoon as the large veſſels that enter its ſubſtance are divided, ſlip as eaſily, and perhaps eaſier, from it, than an acorn does out of its cup: and there is a ſmoothneſs and poliſh of the parts of both cartilage and bone, which ſhow there is no conjunction of the fibres of the two ſubſtances. While the bones are increaſing within cartilages, the cartilages are extended and ſpread out; by which, with the preſſure which they ſuffer, and the great influx of various fluids, and the nutritious matter being hindered to flow freely into them, they decreaſe continually, and at laſt may truly be ſaid to be entirely deſtroyed. Dr Buddæus endeavours to prove, that the preternatural oſſifications, which are commonly ſaid to be formed in different parts of the body, do not deſerve that name; for that theſe hard ſubſtances have ſcarce any other properties of bone except whiteneſs and hardneſs.

* OSSIFICK. *adj.* [*oſſa* and *facio*, Lat.] Having the power of making bones, or changing carneous or membranous to bony ſubſtance.—If the caries be ſuperficial, and the bone firm, you may by medicaments conſume the moiſture in the caries, dry the bone, and diſpoſe it, by virtue of its *oſſifick* faculty, to thruſt out callus, and make ſeparation of its caries. *Wiſeman.*

(1.) * OSSIFRAGE. *n. ſ.* [*oſſifraga*, Latin; *oſſifrague*, Fr.] A kind of eagle, whoſe fleſh is forbid under the name of gryphon. The *oſſifraga* or *oſſpray*, is thus called, becauſe it breaks the bones of animals in order to come at the marrow. It is ſaid to dig up bodies in church-yards, and eat what it finds in the bones, which has been the occaſion that the Latins call it *avis buſtaria*. See OSPRAY. *Calmet.*

(2.) OSSIFRAGE. See FALCO, N° 9, 13.

OSSIFRAGUM, in botany, a name given by Bartholinus, and ſome other writers, to a kind of graſs which grows in ſome parts of Norway. It comes up early in the ſpring, before any other graſs, and the cattle are tempted to eat it; but it emaciates them, and renders them ſickly: their back bones become protuberant if they feed on it for any time; and their legs ſo weak that they can hardly go. The remedy among the country people is very curious: They collect the bones of different animals, and break them into ſmall pieces. The cattle greedily devour this ſort of food when offered them in this diſeaſe, and there follows a ſort of drivelling at the mouth for a conſiderable time, after which they become perfectly well. The kingdom of Norway is full of mines, and the effluvia of theſe may be the occaſion of the cattle's illneſs, and the ceaſing of theſe effluvia their cure; for it is not probable that either of theſe effects ſhould be owing to the graſs or the bones.

OSSIFRAGUS. See FALCO, N° 9, 13.

* *To* OSSIFY. *v. a.* [*oſſa* and *facio*] To change to bone.—The dilated aorta everywhere in the neighbourhood of the cyſt is generally *oſſified*. *Sharp's Surgery.*

OSSIG, a town of Sileſia, in Neiſſe.

OSSILAGO, in Roman antiquity, the god of the bones, who was ſuppoſed to have the care of forming and joining the human bones; and on that account was chiefly worſhipped by pregnant women.

(1.) OSSIPEE, or OSSAPY, mountains of New Hampſhire, in Strafford county, near the E. line of the State; 40 miles N. of Concord.

(2.) OSSIPEE, a townſhip of New Hampſhire, in Strafford county, containing about 400 citizens. It was incorporated in 1785.

(3.) OSSIPEE, a lake in the above mountains, NE. of lake Winipiſcogee.

* OSSIVOROUS. *adj.* [*oſſa* and *voro.*] Devouring bones.—The bore of the gullet, in a dog and other *oſſivorous* quadrupeds, is very large. *Denham's Phyſico-Theology.*

OSSNOBIAN, or ASSENOBOYNE, a river of N. America, which riſes far W. of Lake Superior.

OSSNOBIANS, a tribe of N. American Indians, who inhabit the country near the ſource of the above river. They live wholly in tents, made of buffalo ſkins, and uſe nothing but animal food. Bread is unknown to them.

(1.) OSSOLA, or OSCELLA, a diſtrict of the Italy, in the department of the Agogna; about 35 miles long, and from 15 to 25 broad. It is mountainous, but fertile and populous. It lies between the ci-devant Valais, and lake Maggiore, and before the late revolutions belonged to Piedmont.

(2.) OSSOLA DOMO D', the capital of the above diſtrict. Lon. 8. 25. E. Lat. 46. 3. N.

OSSOLIN, a town of Poland, in Sandomirz, 20 miles W. of Sandomirz.

(1.) OSSORY, the weſt diviſion of Queen's County, in Ireland.

(2.) OSSORY, Bale, biſhop of. See BALE, N° 1.

* OSSUARY. *n. ſ.* [*oſſuarium*, Lat.] A charnel houſe; a place where the bones of dead people are kept. *Dict.*

OSSUN, a town of France, in the dep. of the Upper Pyrenees; 6 miles SW. of Tarbe, and 12 N. of Argelez.

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OSSUNA, an ancient and conſiderable town of Spain, in Andaluſia, with an univerſity and an hoſpital. Lon. 4. 18. W. Lat. 37. 8. N.

* OST. Oust. *n. ſ.* A veſſel upon which hops or malt are dried. *Dict.*

OSTABAT, a town of France, in the dep. of the Lower Pyrenees; 6 miles S. of St Palais, and 9 W. of Mauleon.

OSTADE, Adrian Van, an eminent Dutch painter, born at Lubec, in 1610. He was a diſciple of Francis Hals. His ſubjects were always of the low kind; but his pictures are tranſparent and highly finiſhed, and he is one of the Dutch maſters who beſt underſtood the *chiaro obſcura*. He died in 1685. His works are very ſcarce; ſo that no price is thought too much for them. His prints etched by himſelf, large and ſmall, conſiſt of 54 pieces.

OSTAGIO, a town of Italy, 15 miles NW. of Genoa.

OSTAKRE, a town of France, in the dep. of the Scheldt, and ci-devant province of Auſtrian Flanders; 4 miles N. of Ghent.

OSTALRIC, a town of Spain, in Catalonia. It had a ſtrong caſtle, but it was taken by the French and demoliſhed in 1695. It is ſeated on the river Tordera, in Lon. 2. 45. E. Lat. 24. 44. N.

OSTASCHKOV, a town of Ruſſia in Tuer.

OSTBORG, a town of Holland in the iſle Cadſand, depart. of Meuſe, and late province of Dutch Flanders.

OSTFIN. See Osthan.

OSTELLATO, a market town of Italy, in the dep. of the Lower Po; diſtrict and late duchy of Ferrara.

OSTEN, a town of Lower Saxony, in Bremen; 11 miles NW. of Stade.

OSTENA, a town of Italy, in the dep. of the Lario, diſtrict and ci-devant county of Como, on the lake of Lugano.

OSTEND, a very ſtrong ſea port town of France, in the depart. of the Lys, and late prov. of Auſtrian Flanders, with a good harbour and a magnificent town-houſe. It is not very large, but is well fortified. It was much more conſiderable before the long ſiege of the Spaniards, which continued from 1601 to 1604, when it was almoſt entirely reduced to aſhes. The Dutch loſt 50,000 men, and the Spaniards 80,000. This place was taken by the Dutch in 1706, but reſtored to the emperor in 1724, when an Eaſt India company was eſtabliſhed here, but entirely ſuppreſſed by treaty in 1731. It was taken by the French in Auguſt 1745, after ten days ſiege, but reſtored by the treaty of Aix-la-Chapelle. It was over-run by the French Republicans, under Dumourier, but was quickly recovered by the junction of the allies. It was at laſt, however, taken by the French under Pichegru, on the 1ſt July, 1794, and annexed to the republic in 1796. In May, 1798, a body of 4000 Britiſh troops, under the Earl of Errol, made a deſcent upon Oſtend, with the view of either taking it, or at leaſt demoliſhing the ſluices; but though ſome damage was done to the ſluices, the chief object of the expedition failed; the Britiſh were repulſed; and 105 officers, 1265 ſoldiers, and 400 ſailors, in all 1770, were left priſoners of war. It is 10 miles W. of Bruges, 8 NE. of Nieuport, 22 NE. of Dunkirk, and 60 NW. of Bruſſels. Lon. 3. 1. E. Lat. 51. 14. N.

* OSTENSIBLE. *adj.* [*oſtendo*, Lat.] Such as is proper or intended to be ſhewn.

* OSTENSIVE. *adj.* [*oſtentif*, Fr. *oſtendo*, Lat.] Showing; betokening.

* OSTENT. *n. ſ.* [*oſtentum*, Latin.] 1. Appearance; air; manner; mien.—

Like one well ſtudied in a ſad *oſtent*,
To pleaſe his grandam. *Shak. Merch. of Venice.*

2. Show; token. Theſe ſenſes are peculiar to *Shakeſpeare*.—

Be merry, and employ your chiefeſt thoughts
To courtſhip, and ſuch fair *oſtents* of love
As ſhall conveniently become you there. *Shak.*

3. A portent; a prodigy; any thing ominous.—

That admir'd, whereof a fact ſo clean
Of all ill as our ſacrifice, ſo fearful an *oſtent*,
Should be the iſſue. *Chapman.*

Latinus, frighted with this dire *oſtent*,
For counſel to his father Faunus went. *Dryden.*

* OSTENTATION. *n. ſ.* [*oſtentation*, Fr. *oſtentatio*, Lat.] 1. Outward ſhow; appearance.—

Make good this *oſtentation*, and you ſhall
Divide in all with us. *Shak. Coriolanus.*

You are come
A market maid to Rome, and have prevented
The *oſtentation* of our love. *Shak.*

2. Ambitious diſplay; boaſt; vain ſhow. This is the uſual ſenſe.—A vain *oſtentation* of wit ſets a man on attacking an eſtabliſhed name, and ſacrificing it to the mirth and laughter of thoſe about him. *Spectator*.—He knew that good and bountiful minds were ſometimes inclined to *oſtentation*, and ready to cover it with pretence of inciting others by their example. *Atterbury.*—

With all her luſtre, now, her lover warms;
Then out of *oſtentation*, hides her charms. *Young.*

—The painter is therefore to make no *oſtentation* of the means by which this is done, *Reynolds.* 3. A ſhow; a ſpectacle. Not in uſe.—The king would have me preſent the princeſs with ſome delightful *oſtentation*. *Shak. Love's Labour Loſt.*

* OSTENTATIOUS. *adj.* [*oſtento*, Lat.] Boaſtful; vain; fond of ſhow; fond to expoſe to view.—Your modeſty is ſo far from being *oſtentatious* of the good you do, that it bluſhes even to have it known. *Dryden.*—They let Ulyſſes into his diſpoſition, and he ſeems to be ignorant, credulous, and *oſtentatious*. *Broome on the Odyſſey.*

* OSTENTATIOUSLY. *adv.* [from *oſtentatious*.] Vainly; boaſtfully.

* OSTENTATIOUSNESS. *n. ſ.* [from *oſtentatious*.] Vanity; boaſtfulneſs.

* OSTENTATOUR. *n. ſ.* [*oſtentateur*, Fr. *oſtento*, Lat.] A boaſter; a vain ſetter to ſhow.

(1.) * OSTEOCOLLA. *n. ſ.* [οστεον and κολλαω; *oſteocolle*, Fr.] *Oſteocolla* is frequent in Germany, and has long been famous for bringing on a callus in fractured bones. *Hill's Mat.—Oſteocolla* is a ſpar, generally coarſe, concreted with earthy or ſtony matter, precipitated by water, and incruſted upon ſticks, ſtones, and other like bodies. *Woodward.*

(2.) Osteocolla, οστεοκολλα, in natural hiſtory, a white or aſh-coloured ſparry ſubſtance, in ſhape like a bone, and by ſome ſuppoſed to have the quality of uniting broken bones, on which account it is ordered in ſome plaſters; a ſuppoſition

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we fear, which is not warranted by experience. It is found in long, thick, and irregularly cylindric pieces, which are in general hollow, but are ſometimes filled up with a marly earth, and ſometimes contain within them the remains of a ſtick, round which the oſteocolla had been formed; but though it is plain from thence that many pieces of oſteocolla have been formed by incruſtations round ſticks, yet the greater number are not ſo, but are irregularly tubular, and appear to be formed of a flat cake, rolled up in a cylindric ſhape. The cruſts of which theſe are compoſed do not form regular concentric circles round the internal cavity, as muſt have been the caſe had they been formed by incruſtation. On the other hand, they plainly ſhew that they were once ſo many thin ſtrata, compoſing a flat ſurface, which has afterwards been rolled up, as one might do a paper three or four times doubled, into two, three, or more ſpiral lines; in which caſe, each ſingle edge of the paper would be everywhere a regular point of a continued ſpiral line drawn from a given point; but they would by no means be ſo many detached concentric circles. The oſteocolla is found of different ſizes, from that of a crow-quill to the thickneſs of a man's arm. It is compoſed of ſand and earth, which may be ſeparated by waſhing the powdered oſteocolla with water, and is found, both in digging and in ſeveral brooks, in many parts of Germany and elſewhere. It is called hammoſteus in many parts of Germany. It has this name in theſe places from its always growing in ſand, never in clay, or any ſolid ſoil, nor even in gravel. Where a piece of it any where appears on the ſurface, they dig down for it, and find the branches run ten or twelve feet deep. They uſually run ſtraight down, but ſometimes they are found ſpreading into many parts near the ſurface, as if it were a ſubterraneous tree, whoſe main ſtem began at 12 feet depth, and thence grew up in a branched manner till met by the open air. The main trunk is uſually as thick as a man's leg, and the branches that grow out from it are thickeſt near the trunk, and thinner as they ſeparate from it. The thineſt are about the ſize of a man's finger. The people employed to collect it, when they cannot find any mark of it on the ſurface, ſearch after the ſpecks of white, or little lumps of whitiſh ſoft matter, which they find lying in various parts on the top of the ſand. Theſe always lead them, either to a bed of perfect oſteocolla, or to ſome in the formation. If they miſs of it, they ſtill find a ſubſtance like rotten wood; which, when traced in its courſe, is found to proceed from a main trunk, at the depth of that of the oſteocolla, and to ſpread itſelf into branches in the ſame manner. The diggers call this ſubſtance the flower of oſteocolla or hammoſteus. The oſteocolla found in the earth is at firſt ſoft and ductile; but in half an hour, if expoſed to the air, it becomes as hard as we find it in the ſhops. The method to take up a perfect piece for a ſpecimen is to open the ground, clear away and leave it ſo for an hour or thereabouts; in this time it will harden, and may be taken out whole. It is certain, that the oſteocolla is produced at this time; for if a pit be cleared of it, there will more grow there in a year or two, only it will be ſofter, and will not harden ſo eaſily in the air as the other. What the rotten ſubſtance reſembling the decayed branches of trees is, we cannot determine, unleſs it really be ſuch; but the opinion of the common people, that it is the root of ſomething, is abſurd; becauſe its thickeſt part always lies at the greateſt depth, and the branches all run upwards. The oſteocolla is a marly ſpar, which concretes round this matter; but what it is that determines it to concrete nowhere on the ſame ground but about theſe branches, it is difficult to ſay. The rottenneſs of this ſubſtance, which forms the baſis of the oſteocolla, renders it very liable to moulder and fall away; and hence it is that we uſually ſee the oſteocolla hollow. Sometimes it is found ſolid; but in this caſe there will be found to have been a vegetable matter ſerving as its baſis; and inſtead of one branch, it will be found in this caſe to have concreted about a number of fibres, the remains of which will be found in it on a cloſe examination. See *Philoſ. Tranſ.* N° 39.

(1.) * OSTEOCOPE. *n. ſ.* [ὀστέον and κόπτω; *oſteocope*, French.] Pains in the bones, or rather in the nerves and membranes that encompaſs them. *Dict.*

(2.) OSTEOCOPE. } See MEDICINE, *Index.*
OSTEOCOPUS. }

OSTEOLOGIST. *n. ſ.* an anatomiſt, one ſkilled in oſteology. *Aſh.*

(1.) * OSTEOLOGY. *n. ſ.* [ὀστέον and λόγος; *oſteologie*, Fr.] A deſcription of the bones.—Richard Farloe, well known for his acuteneſs in diſſection of dead bodies, and his great ſkill in *oſteology*, has now laid by that price. *Tatler.*

(2.) OSTEOLOGY. See ANATOMY, *Part* I.

OSTEOPTERYGIOUS. *adj.* Having bones in the fins. *Aſh.*

OSTEOSPERMUM, in botany, *Hard-ſeeded Chryſanthemum*, a genus of plants, of the ſyngeneſia claſs, in the polygamia neceſſaria order; and in the natural method ranking under the 49th order, *Compoſitæ*.

(1.) OSTER, a river of Ruſſia, which runs into the Deſna, near Kozeltz, in Kiev.

(2.) OSTER, a town of Ruſſia, in Kiev, at the conflux of the Oſter and Deſna; 24 miles N. of Kiev. Lon. 49. 0. E. Ferro. Lat. 50. 58. N.

(3.) OSTER CAPPELN, a town of Oſnaburg; 10 miles ENE. of Vorden.

(4.) OSTER OEN, an iſland of Norway, 20 miles NW. of Bergen.

OSTERAGH. See OSTRACH.

OSTERBURG, a town of Brandenburg, 36 miles NW. of Brandenburg, and 60 WNW. of Berlin.

OSTERBY, a town of Sweden, in Upland.

OSTERFELD, two towns of Upper Saxony: 1. In Thuringia, two miles S. of Stoſſen: 2. In Naumburg, ſeven miles SE. of Naumburg, and eight W. of Zeitz.

OSTERHOFEN, a town of Bavaria, on the Danube, 20 miles NW. of Paſſau.

OSTERHOLZ, a town of Lower Saxony, in Bremen; ſeven miles E. of Bremen.

OSTEROD, a town of Norway, 28 miles NW. of Drontheim.

(1.) OSTERODE, a town of Lower Saxony, in Grubenhagen, on the Saal; containing 800 houſes.

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a corn magazine, and a woollen manufactory; 16 miles SW. of Goslar, and 18 SSE. of Einbeck.

(2.) OSTERODE, or OSTERRODE, a town of Prussia, in Oberland, on the Dribentz, defended by a castle, built about A. D. 1400; 65 miles SE. of Dantzic, and 70 SSW. of Konigsberg.

OSTERTZ, a town of Croatia, 14 miles SW. of Varasdin.

OSTERVALD, John Frederick, a celebrated protestant divine, born at Neufchatel, in 1663, and descended of an ancient family. He made such rapid progress in his studies, that he became M. A. at Saumur before he was 16 years of age. He afterwards studied at Orleans and at Paris. At his return to Neufchattel in 1699 he became professor of divinity and pastor of the church there; and contracted a strict friendship with the celebrated John Alphonsus Turretin of Geneva and the illustrious Samuel Werenfels of Basil. The union of these three divines, which was called the *Triumvirate of the divines of Switzerland*, lasted till his death. Mr Ostervald acquired the highest reputation by his virtues, his zeal in instructing his disciples, and restoring ecclesiastical discipline. He wrote many books in French, the principal of which are, 1. *A Treatise concerning the Causes of the present Corruptions of Christians, and the remedies*; which was translated into English, and has been often published. 2. A Catechism, or Instruction in the Christian Religion; which has been translated into German, Dutch, and English; and the Abridgment of the Sacred History, which he prefixed to it, was translated and printed in Arabic, to be sent to the East Indies, by the Society for the Propagation of the Gospel established in London, who admitted him an honorary member. 3. A treatise against Impurity. 4. An edition of the French Bible of Geneva, with arguments and Reflections, in folio. 5. *Ethica Christiana*. 6. *Theologiæ Compendium*, &c. He died in 1747. He had a son, who was pastor of the English church at Basil, and maintained the reputation of his father. He published a work, which is much esteemed, entitled *Les Devoirs des Communions*.

OSTERWIECK, a town of Lower Saxony, in Halberstadt, on the Ilse, famed for woollen manufactures; 13 miles W. of Halberstadt, and 15 NE. of Goslar.

OSTERWITZ, a citadel of Carinthia.

OSTERWYCK, Mary VAN, a celebrated Dutch paintress, born near Delft, in 1630. Her chief subjects were flowers, and still life, which she painted with great delicacy. She died in 1693.

OSTERZELE, a town of France, in the dep. of the Scheldt, and ci-devant province of Austrian Flanders; nine miles SSE. of Ghent.

OSTHAMMAR, a town of Sweden, in Upland.

OSTHAN, or OSTEIN, a river of France, which runs into the Chiers, 3 miles above Montmedi.

OSTHEIM, a town of Franconia, in Henneberg; 6 miles SW. of Meinungen.

OSTHOFFEN, a town of Germany, in the late palatinate of the Rhine, two miles NNW. of Manheim. As the city of MANHEIM was allotted to the Elector of Baden, by Bonaparte, on the division of the indemnities in August 1802, this town probably belongs also to the Elector.

(1.) OSTIA, an ancient and celebrated town of Italy, in Campagna, at the mouth of the Tiber, 12 miles SW. of Rome. It was built by Ancus Martius, the 4th king of Rome, and was called *Ostia Tiberina*, in the plural number, i. e. the two mouths of the Tiber, which were separated by the Holy Island, an equilateral triangle, whose sides were each of them computed at two miles. The colony of Ostia was founded immediately beyond the S. or left, and the port immediately beyond the N. or right, branch of the river; and the distance between their remains measures something more than two miles. In the time of Strabo, the sand and mud deposited by the Tiber had choaked the harbour of Ostia; the progress of the same cause has added much to the size of the Holy Island, and gradually left both Ostia and the port at a considerable distance from the shore. The dry channels and the large estuaries mark the changes of the river and the efforts of the sea. Its port was one of the most stupendous works of the Roman magnificence, and it was a long time one of the best towns on the coast; but having been destroyed by the Saracens, and the harbour choaked up, it has not been able since to recover its importance. But it is the see of a bishop, who is deacon of the cardinals, and crowns the Pope. Lon. 12. 24. E. Lat. 41. 44. N. There were salt-works in Ostia, called *Salinæ Ostienses*, as early as the reign of Ancus Martius (*Livy*); from which the *Via Salaria*, which led to the Sabines, took its name. (*Varro.*) It gave name to the gate of Rome, called *Ostiensis*. (*Ammian.*)

(2.) OSTIA, OLD, where the ruins of the ancient harbour are still to be seen, lies beyond New Ostia, nearer the sea; and contains only a few houses and an ancient castle.

OSTIACKS, a people of Asia, in Siberia. They live upon the banks of the Oby and Jenisay, and some other rivers which fall into these. They are very poor and very lazy, and in summer live mostly upon fish. They are of a middle size, with broad faces and noses, and yellowish or red hair. All their garments from top to toe are made of fish skins, for they have neither linen nor woollen. and indeed they might almost as well go naked. Their greatest diversion is hunting; and they go together in crowds, with a weapon like a large knife fastened in a stick. In summer they take and dry the fish which serves them in winter; and when that season begins, they go into the woods with their bows and arrows, their dogs and nets, to kill sables, ermines, bears, rein-deer, elks, martens, and foxes. Part of the furs of these is paid as a tax to the emperor of Russia, and the rest are sold at a stated price to the Russian governors, but sometimes they are allowed to dispose of them to private persons. They chiefly live upon venison, wild fowls, fish, and roots, for they have neither rice nor bread. They drink for the most part water, and it is said they can very well relish a draught of train oil. They are immoderately fond of tobacco, and of swallowing the smoke, which intoxicates them. In winter they build their huts in woods and forests, where they find the greatest plenty of game, and dig deep in the earth to secure themselves

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themſelves from the cold, laying a roof of bark or ruſhes over their huts, which are ſoon covered with ſnow. In ſummer they build above ground on the banks of the rivers, to enjoy the convenience of fiſhing, and make no difficulty of forſaking their habitations. They have a ſort of princes among them, in one of whoſe houſes ſome European travellers found four wives. One of theſe had a red cloth coat on, and was ſet off with all ſorts of glaſs beads. They may have as many wives as they pleaſe, and make no ſcruple of marrying their neareſt relations. They purchaſe a wife of her relations for 3 or 4 rein-deer, and take as many as they pleaſe, returning them again if they do not like them, only loſing what they gave for the purchaſe. Upon the birth of their children, ſome gave them the name of the firſt creature they happen to ſee afterwards: others call their children according to the order of their birth, as *Firſt*, *Second*, *Third*, &c. There was no other furniture than cradles and cheſts, made of the bark of trees ſewed together. Their beds conſiſted of wood-ſhavings, almoſt as ſoft as feathers, and their children lie naked upon them in cradles. They can neither read nor write, nor do they cultivate the land; and ſeem totally ignorant of times paſt. Their boats are only made of the bark of trees ſewed together. Their religion is Pagan; and they have ſome little brazen idols, tolerably well caſt, repreſenting men and animals, made of wood and earth, all of which are dreſſed in ſilks, in the manner of Ruſſian ladies. To theſe they ſometimes offer a beaſt or a fiſh in ſacrifice, and are perſuaded that the ſaint or hero repreſented by the image always attends their ſacrifices, and when over, returns to his abode in the air. The Oſtiacks are obliged to take an oath of fidelity, or rather an *imprecation*, to the Ruſſian government.

OSTIANY, a town of Lithuania, in Wilna.

* OSTIARY, *n. ſ.* [*oſtium*, Lat.] The opening at which a river diſembogues itſelf.—It is received, that the Nilus hath ſeven *oſtiaries*, that is, by ſeven channels diſburtheneth itſelf into the ſea. *Brown.*

OSTIGLIA, a town of Italy, in the dep. of the Mincio, diſtrict and late duchy of Mantua; on the N. bank of the Po, 19 miles ESE. of Mantua. It was anciently called *Hoſtilia*.

OSTINES, a town of Barbadoes.

OSTINGHAUSEN, a town of Germany, in Weſtphalia, on the Alſt; 8 m. W. of Lippſtadt.

OSTISCO, a lake of New York, 8 miles SW. of Onondago Caſtle.

* OSTLER. *n. ſ.* [*hoſtelier*, French.] The man who takes care of horſes at an inn.—The ſmith, the *oſtler*, and the boot-catcher, ought to partake. *Swift.*

* OSTLERY. *n. ſ.* [*hoſtelerie*, French.] The place belonging to the oſtler.

OSTON, a town of Suffolk, SW. of Needham.

OSTRA, a town and river of Moravia, in Prerau, on the borders of Sileſia, 20 miles SE. of Troppau.

OSTRACH, or OSTERACH, a town, river, and valleys, of Germany, in Suabia, near Mengen; where the French under Gen. Jourdan, attacked the Auſtrians under the Archduke Charles, and drove in their out-poſts on the 20th March 1799; but on the 21ſt were defeated, with the loſs of 5000 men; while that of the Auſtrians was only 2160.

OSTRACINE, an ancient town of Egypt, on the borders of Paleſtine. *Plin.* v. c. 14.

OSTRACION, in zoology, a genus of the claſs *amphibia nantes*. It has ten long cylindrical obtuſe teeth in each jaw; the aperture is linear; the body is covered with a bony ſubſtance, and it has no belly fins. There are nine ſpecies, chiefly diſtinguiſhed by the angles of their bodies, and number of fins near their tales.

* (1.) OSTRACISM, *n. ſ.* [ὀστρακισμος; *oſtraciſme*, Fr.] A manner of paſſing ſentence, in which the note of acquittal or condemnation was marked upon a ſhell, which the voter threw into a veſſel. Baniſhment; public cenſure.—

Virtue in courtiers hearts
Suffers an *oſtraciſm*, and departs. *Donne.*

—Public envy is as an *oſtraciſm*, that eclipſeth men when they grow too great. *Bacon.*—

Hyperbolus by ſuffering did traduce
The *oſtraciſm*, and ſham'd it out of uſe. *Cleavl.*

—This man, upon a ſlight and falſe accuſation of favouring arbitrary power, was baniſhed by *oſtraciſm*. *Swift.*

(2.) OSTRACISM, in Grecian antiquity, denotes the baniſhment of ſuch perſons whoſe merit and influence excited the jealouſy of the people of Athens, leſt they ſhould attempt any thing againſt the public liberty. This puniſhment was called *oſtraciſm*, from the Greek word ὀστρακον, which properly ſignifies *a ſhell*; but when applied to this object, it is uſed for the billet on which the Athenians wrote the names of rhe citizens whom they intended to baniſh, which was *a piece of baked earth, in the form of a ſhell*: The perſon who propoſed the law was its firſt victim, but as to his name and the time of its eſtabliſhment, the ancients differ extremely. Many think that oſtraciſm owes its origin to very remote times. The puniſhment of oſtraciſm was inflicted by the Athenians when their liberty was in danger. When jealouſy or ambition had ſowed diſcord among the chiefs of the republic; and different parties were formed, which threatened a revolution, the people aſſembled to propoſe meaſures proper to be taken, to prevent the conſequences of a diviſion which in the end might be fatal to freedom. A decree mas made, by which a day was fixed to proceed to the ſentence of oſtraciſm. Then they who were threatened with baniſhment omitted no art to gain them the favour of the people. Some time before the meeting of the aſſembly, a wooden incloſure was raiſed in the forum, with ten doors, *i. e.* with as many as there were tribes in the republic; and when the appointed day was come, the citizens of each tribe entered at their reſpective doors, and threw into the middle of the incloſure the ſmall brick on which the citizen's name was written whoſe baniſhment they voted. The archons and the ſenate preſided at this aſſembly, and counted the billets. He who was condemned by 6000 of his fellow-citizens, was obliged to quit the city within ten days; for 6000 voices, at leaſt, were requiſite to baniſh an Athenian by oſtraciſm. The Athenians, without doubt, foreſaw the inconveniences to which this law

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law was ſubject; but they chooſe rather, as Cornelius Nepos hath remarked, ſometimes to expoſe the innocent to an unjuſt cenſure, than to live in continual alarms. Yet as they were ſenſible that the injuſtice of confounding virtue and vice would have been too flagrant, they ſoftened, as much as they could, the rigour of oſtraciſm. It was not aggravated with the circumſtances which were moſt diſhonourable and ſhocking in the ordinary mode of exile. They did not confiſcate the goods of thoſe who were baniſhed by oſtraciſm. They enjoyed the produce of their effects in the places into which they were baniſhed; and they were baniſhed only for a certain time. But in the common baniſhment, the goods of the exiles were always confiſcated, and no hopes were given them of ever returning to Athens.

(1.) * OSTRACITES. *n. ſ. Oſtracites* expreſſes the common oyſter in its foſſile ſtate. *Hill.*

(2.) OSTRACITES, or foſſile oyſters, are common in many parts of England. They are of various ſhapes and kinds; and the name is by ſome authors uſed for the ſhell itſelf, when preſerved in its native ſtate and condition; as is the caſe with thoſe about Woolwich and Blackheath; and by others, for the ſtone caſt or formed in thoſe ſhells, or in cavities from whence they have been waſhed away and diſſolved: in both theſe caſes the ſtone carries the exact reſemblance of the ſhell, even in its niceſt lineaments; in the firſt caſe, bearing every mark of the inſide; in the other of the outer ſurface. We have this ſtone in great plenty in many parts of England; and it is famous, in ſome places, for its reputed virtue in caſes of gravel, and the like complaints. See *Pl.* 261.

OSTREA, the OYSTER, in zoology, a genus belonging to the order of vermes teſtacea. The ſhell has two unequal valves; the cardo has no teeth, but a ſmall hollowed one with tranſverſe lateral ſtreaks. There are 31 ſpecies, principally diſtinguiſhed by peculiarities in their ſhells. See *Plates* CCXLVII. and CCLXI. The common oyſter is reckoned an excellent food; and is eaten both raw and variouſly prepared. The character of the genus, in the words of Barbut, is, "The animal is a tethys; the ſhell bivalve, unequivalve, with ſomething like ears; the hinge void of teeth, with a deep oval hole, and tranſverſe ſtreaks on the ſides. There is no womb nor anus." The genus is divided by Barbut into four families, of which oſtrea is the laſt. But this diviſion ſavours of confuſion. If *Oſtrea* be Barbut's name of the *genus*, it ought not to be alſo the name of a *family* or *ſubdiviſion*. See PECTEN. The ſame author gives us the following account of the oyſter. "This ſea fiſh occupies in the ſcale of nature one of the degrees the moſt remote from perfection; deſtitute of defenſive weapons and progreſſive motion, without art or induſtry, it is reduced to mere vegetation in perpetual impriſonment, though it every day opens regularly to enjoy the element neceſſary to its preſervation. The animal figure, and the ſprings of its oganization, are ſcarce diſcernible through the coarſe and ſhapeleſs maſs; a ligament placed at the ſummit of the ſhell ſerves as an arm to its operations. Oyſters are reputed tobe hermaphrodites; the ſpawn which they caſt in May adheres to the rocks and other matters at the bottom of the ſea; and in the ſpace of 24 hours is provided with ſhells in which are contained other oyſters, that never leave the ſpot on which they were fixed till the greedy fiſherman tears them from the element. The green oyſters eaten at Paris are commonly brought from Dieppe. Their colour is owing to the care taken to bed them in creeks, encompaſſed with verdure, whence they acquire their delicacy. Common oyſters ſhould be freſh, tender, and moiſt. The moſt eſteemed are thoſe caught at the mouths of rivers, and in clear water. Great account is made of oyſters from Britanny, but ſtill greater of thoſe that come from Morennes in Saintonge. Preference is given to thoſe that are edged with a ſmall brown fringe, or beard, which epicures call fecundated oyſters; but that theſe are females is a miſtake. The want of freſh water renders oyſters hard, bitter, and unpalatable. Mud and ſea weeds deſtroy them in their very birth; galangal root, muſcles, ſcollops, ſea ſtars, and crabs, are formidable enemies to the oyſter. There are found in Spain red and ruſſet-coloured oyſters; in Illyria, brown coloured, with the fleſh black; and in the Red Sea, of the colours of the Iris. Oyſters of the mangle tree are of two ſorts; thoſe of St Domingo are delicate, adhering to the ſtumps of the trees that dip in the water. The negro divers cut them off with a bill, and they are ſerved upon table with the roots." Britain has been noted for oyſters from the time of Juvenal. The luxurious Romans were very fond of this fiſh, and had their layers or ſtews for oyſters as we have at preſent. Sergius Orata was the firſt inventor of ſtews, as early as the time of L. Craſſus, the orator. He did not make them for the ſake of indulging his appetite, but through avarice, and made great profits from them. Orata got great credit for his Lucrine oyſters; for, ſays Pliny, the Britiſh were not then known. The ancients eat them raw, having them carried up unopened, and generally eating them at the beginning of the entertainment, but ſometimes roaſted. They had alſo a cuſtom of ſtewing them with mallows and ducks, or with fiſh. Britain ſtill preſerves its ſuperiority in oyſters over other countries. Moſt of our coaſts produce them naturally; and in ſuch places they are taken by dredging, and are become an article of commerce, both raw and pickled. The very ſhells, calcined, become an uſeful medicine as an abſorbent. In common with other ſhells, they prove an excellent manure. Stews or layers of oyſters are formed in places which nature never allotted as habitations for them. Thoſe near Colcheſter have been long famous; at preſent there are others that at leaſt rival the former, near the mouth of the Thames. The oyſters, or their ſpats, are brought to convenient places, where they improve in taſte and ſize. It is an error to ſuppoſe, that the fine green, obſerved in oyſters taken from artificial beds, is owing to copperas; it being notorious how deſtructive the ſubſtance or the ſolution of it is to all fiſh. We cannot give a better account of the cauſe, or of the whole treatment of oyſters, than that in the learned Bp. Sprat's hiſtory of the Royal Society, p. 307. to 309.

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309. "In May, the oysters cast their spawn, (which the dredgers call their *spats*); it is like to a drop of candle, and about the bigness of a halfpenny. The spat cleaves to stones, old oyster-shells, pieces of wood, and such like things, at the bottom of the sea, which they call *clutch*. It is probably conjectured, that the spat in 24 hours begins to have the shell. In May, the dredgers (by the law of the admiralty court) have liberty to catch all oysters, of what size soever. When they have taken them, with a knife they gently raise the small brood from the clutch, and then they throw the clutch in again, to preserve the ground for the future, unless they be so newly spat, that they cannot be safely severed from the clutch; in that case they are permitted to take the stone or shell, &c. that the spat is upon, one shell having many times 20 spats. After May, it is felony to carry away the clutch, and punishable to take any other oysters, unless it be those of size, (that is to say) about the bigness of an half-crown piece, or when, the two shells being shut, a fair shilling will rattle between them. The places where these oysters are chiefly catched, are called the *Pent-Burnham*, *Malden*, and *Colne waters*; the latter taking its name from the Colne, which passes by Colchester and gives name to that town. (See COLNE.) This brood and other oysters they carry to the creeks of the sea, at Brickelsea, Mersy, Langno, Piugrego, Wivenho, Tolesbury, and Saltcoast, and there throw them into the channel, which they call their *beds* or *layers*, where they grow and fatten; and in two or three years the smallest brood will be oysters of the size aforesaid. Those oysters which they would have green, they put into pits about three feet deep in the salt-marshes, which are overflowed only at spring-tides, to which they have sluices, and let out the salt-water until it is about a foot and half deep. These pits, from some quality in the soil co-operating with the heat of the sun, will become green, and communicate their colour to the oysters that are put into them in 4 or 5 days, though they commonly let them continue there six weeks or two months, in which time they will be of a dark green. To prove that the sun operates in the greening, Tolesbury pits will green only in summer; but that the earth hath the greater power, Brickelsea pits green both winter and summer: and for a further proof, a pit within a foot of a greening-pit will not green; and those that did green very well, will in time lose their quality. The oysters, when the tide comes in, lie with their hollow shell downwards; and when it goes out, they turn on the other side: they remove not from their place, unless in cold weather, to cover themselves in the ouse. The reason of the scarcity of oysters, and consequently of their dearness, is, because they are of late years bought up by the Dutch. There are great penalties by the admiralty court laid upon those that fish out of those grounds which the court appoints, or that destroy the clutch, or that take any oysters that are not of size, or that do not tread under their feet, or throw upon the shore, a fish which they call a *five finger*, resembling a spur-rowl, because that fish gets into the oysters when they gape, and sucks them out. The reason that such a penalty is set upon any that shall destroy the clutch, is because they find, that if that be taken away, the ouse will increase, and the muscles and cockles will breed there, and destroy the oysters, they having not whereon to stick their spat. The oysters are sick after they have spat; but in June and July they begin to mend, and in August they are perfectly well; the male oyster is black sick, having a black substance in the fin; the female white-sick (as they term it), having a milky substance in the fin. They are salt in the pits, salter in the layers, but saltest at sea." The oyster affords the curious in microscopic observations a very pleasing entertainment. In the clear liquor many little round living animalcules have been found, whose bodies being conjoined, form spherical figures with tails, not changing their place otherwise than by sinking to the bottom, as being heavier than the fluid; these have been seen frequently separating, and then coming together again. In other oysters, animalcules of the same kind were found, not conjoined, but swimming by one another, whence they seemed in a more perfect state, and were judged by Mr Leeuwenhoek to be the animalcules in the roe or semen of the oyster. A female oyster being opened, incredible multitudes of small embryo oysters were seen, covered with little shells, perfectly transparent, and swimming along slowly in the liquor; and in another female, the young ones were found of a browner colour, and without any appearance of life or motion. M. Joblot also kept the water running from oysters three days, and it appeared full of young oysters swimming about nimbly in it; these increased in size daily; but a mixture of wine, or the vapour of vinegar, killed them. In August oysters are supposed to breed, because young ones are then found in them. Mr Leeuwenhoek, on the 4th of August, opened an oyster, and took out of it a prodigious number of minute oysters, all alive, and swimming nimbly about in the liquor, by means of certain exceeding small organs, extending a little way beyond their shells; and these he calls their beards. In these little oysters, he could discover the joinings of the shells; and perceived that there were some dead ones, with their shells gaping. These, though so extremely minute, are seen to be as like the large oysters in form as one egg is to another. As to the size of them, he computes that 120 of them in a row would extend an inch; and consequently, that a globular body, whose diameter is an inch, would, if they were also round, be equal to 1,728,000 of them. He reckons 3000 or 4000 are in one oyster, and found many of the embryo oysters among the beards; some fastened thereto by slender filaments, and others lying loose: he likewise found animalcules in the liquor 500 times less than the embryo oysters. It is not very uncommon to see on oyster-shells, when in a dark place, a shining matter or bluish light, like a flame of brimstone, which sticks to the fingers when touched, and continues shining and giving light for a considerable time, though without any sensible heat. This shining matter being examined with a microscope, was found to consist of three sorts of animalcules; the first whitish, and having 24 or 25 legs on a side, forked, a black speck on one part of the head, the back

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back like an eel with the skin stripped off. The second sort, red, resembling the common glow-worm, with folds on its back, but legs like the former; a nose like a dog's, and one eye in the head. The third sort, speckled, with a head like a sole, with many tufts of whitish hairs on the sides of it. Some much larger and greyish might be seen, having great heads, two horns like a snail and 6 or 8 whitish feet; but these did not seem to shine.

(1.) * OSTRICH. *n. s.* [*autruche*, Fr. *struthio*, Lat.] *Ostrich* is ranged among birds. It is very large, its wings very short, and the neck about four or five spans. The feathers of its wings are in great esteem, and are used as an ornament for hats, beds, candpies: they are stained of several colours, and made into pretty tufts. They are hunted by way of course, for they never fly; but use their wings to assist them in running more swiftly. The *ostrich* swallows bits of iron or brass, in the same manner as other birds will swallow small stones or gravel, to assist in digesting or comminuting their food. It lays its eggs upon the ground, hides them under the sand, and the sun hatches them. *Calmet.*—I'll make thee to eat iron like the *ostrich*, and swallow my sword like a great pin, ere thou and I part. *Shak.*—Gavest thou the goodly wings unto the peacock? or wings and feathers unto the *ostrich? Job*, xxxix. 13.—Their *ostrich* stomachs make their swords their meat. *Cleav.*—Modern *ostriches* are dwindled to mere larks. *Arbuthnot.*

(2.) OSTRICH. See STRUTHIO.

(1.) OSTRICONI, a river of France, in Corsica, which runs into the sea, near

(2.) OSTRICONI, a town in the island and dep. of Corsica, 22 miles WSW. of Bastia.

OSTRINGER. See AUSTURCUS.

OSTRITZ, a town of Lusatia, 8 miles S. of Gorlitz.

OSTROE, one of the FERRO ISLANDS.

OSTROFF, MEDNOI. See MEDNOI.

(1.) OSTROG. See KAMTSCHATKA, § 7.

(2, 3.) OSTROG, a town of Poland, in Volhynia, and ci-devant capital of a duchy so named; 38 miles NNW. of Constantinow.

OSTROGOTHIA, or EAST GOTHLAND, a province of Sweden, the E. division of Gothland. See GOTHLAND, N° 1. § i.

OSTROGOTHS, or EASTERN GOTHS. See GOTHS; ITALY, § 6, 7; and THEODORIC.

OSTROGOZSK, a town of Russia, in Voronez; 48 miles S. of Voronez. Lon. 56. 48. E. Ferro. Lat. 51. 0. N.

OSTROGZEK, a town of Poland, in Volhynia; 18 miles SW. of Berdiczow.

OSTROKOLLA, a town of Prussia; 80 miles SE. of Konigsberg.

OSTROLENKA, a town of Poland, in Masovia; 48 miles NE. of Warsaw.

OSTROSINA, a town of Croatia, 12 miles SE. of Carlstadt.

OSTROV, a town of Russia, in Pskov, on the Velika. Lon. 46. 0. E. of Ferro. Lat. 57. 20. N.

OSTROVA, LYSSIE. See FOX ISLANDS; KAMTSCHATKA, § 9; and LYSSIE.

OSTROVAZZO, GREAT, and OSTROVAZZO, LITTLE, } two towns in Dalmatia, on the Zerimagna. The latter has walls.

OSTROUCHOVSKAIA, a town of Russia, in the country of the Cossacks, on the Choper.

OSTROVITZ, a town of Croatia; 12 miles S. of Bihacs.

OSTROVIZZA, a town in Dalmatia (See DALMATIA), which some suppose to be the same as *Arauzona*, and others the STLUPI of the ancients. It was purchased in 1410 by the republic of Venice, for 5000 ducats, and some pieces of land besides. Its fortress, which was seated on a rock perpendicularly cut all round, and deservedly reckoned impregnable before the use of artillery was taken by Soliman in 1524, but soon after returned under the dominion of Venice. At present, no traces of its fortification remain, and it is only a bare and insulated mass. There are some natural curiosities about the place. Ash trees, mushrooms, and vipers abound.

OSTUNI, a town of Naples, in Otranto, with a bishop's see. Its territory is well cultivated, and abounds with olives and almonds. It is seated on a mountain, near the Gulph of Venice: 16 miles NW. of Brindici, and 24 NE. of Tarento. Lon. 17. 49. E. Lat. 49. 59. N.

OSTURCUS. See AUSTURCUS.

(1.) OSWALD, ST, the first Christian king of Northumberland, during the Heptarchy. He totally defeated CADWALL, the British monarch, at the village named from him ST OSWALD, (See N° 2.) but was afterwards defeated and killed by PENDA, K. of Mercia, at OSWESTRY, on the 5th Aug. 642. The Pagan barbarian, Penda, cut his body in pieces, and exposed them on stakes, in the field, as trophies of his victory. The priests, therefore, ranked him as a saint and martyr, and pretended to confirm his saintship by miracles.

(2.) OSWALD, ST, a village of Northumberland, near the Picts Wall, N. of Hexham; where K. OSWALD set up the first cross in Northumberland, in gratitude for his victory. (See N° 1.)

OSWANSLO, a town of Sweden, in Gestricia.

OSWEGATCHY, a lake and river of New York. The latter runs into the St Lawrence, in Lon. 75. 28. W. Lat. 44. 43. N.

(1.) OSWEGO, a fort of North America, on the S. side of the lake Ontario. Lon. 70. 35. N. Lat. 45. 15. N.

(2.) OSWEGO, a river of New York, which runs from lake Oneida; thence meandering W. receives the SENECA; after which, turning NNW. it falls into Lake Ontario, at Fort Oswego. Its whole course is 75 miles. It abounds with salmon.

(3, 4.) OSWEGO, a town and fort of New York, on the E. coast of Lake Ontario. Lon. 76. 36. W. Lat. 43. 22. N.

(5.) OSWEGO TEA. See MONARDA.

OSWEICZEN, or OSWEIZEN, } a town of Poland, in Cracovia. It carries on a great trade in salt, and is seated on the river Vistula, 15 miles SW. of Cracus. Lon. 19. 47. E. Lat. 50. 1. N.

OSWESTRY, an ancient town of England, in Salop; 174 miles from London; with a castle, a wall, and a ditch. It was anciently a borough, and is celebrated in Saxon history and legendary piety;

for

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for the defeat and death of K. Oſwald. (See Oswald, N° 1.) Its church was formerly a monaſtery called *Blanceminſter*. It is ſpacious, and has a handſome plain tower. In 1542 and 1567, this town ſuffered much by fire. It is governed by two bailiffs, burgeſſes, &c. and once drove a great trade in Welch cottons and flannels, which is now much decayed. There is now ſcarce a tolerable inn. But beſides a good grammar ſchool, it has an excellent charity ſchool for 40 boys, beſides girls, where the beſt methods are uſed for exciting the emulation of the children in their learning, by premiums. In the wall with which the town was fortified there were 4 gates. The *Block-gate* is demoliſhed; the New-gate, Willow-gate, and Beatrice-gate, ſtill remain. The laſt is a handſome building, with a guard-room on both ſides. There are only two fragments of the caſtle remaining. It ſtood on an artificial mount, ſurrounded by a foſſe, extending to the Willow-gate. It is 172 miles NW. of London. Lon. 3. 3. W. Lat. 52. 52. N.

OSYMANDES, or OSYMANDYAS, a famous king of Egypt, who, according to ſome authors, was the firſt monarch who collected a great number of books for the purpoſe of forming a library. To this curious collection he gave the title of *Pharmacy of the Soul*. "He appears to have been a prince of great elegance and taſte. Diodorous Siculus deſcribes many ſumptuous edifices erected by him; among theſe his palace or mauſoleum has been eminently diſtinguiſhed for the paintings and ſculptures with which it was adorned.

OSYRIS, in botany, Pont's Cassia, a genus of plants, of the claſs dicœcia, belonging to the order triandria.

OSYTH, St, a village of Eſſex, in which are the remains of an ancient monaſtery, now the ſeat of the Earl of Rochford. It lies near the ſea, 9 miles SE. of Colcheſter.

OSYUT, a town of Egypt, ſeated near a mountain, famous for its vaſt and numerous grottoes, cut out of the ſolid rock; one of which was large enough to hold 600 horſes.

OSZMANA, a town of Lithuania, in Wilna, 28 miles SE. of Wilna.

(1.) OTABALO, a province of S. America, in Quito. The lands are chiefly laid out in plantations of corn, ſugar canes, &c. The native Indians are very induſtrious, both in manufactures and agriculture. They ſow wheat and barley in furrows, putting the grain into ſmall holes, which, though a tedious method, is amply repaid by the produce. They manufacture, cottons, carpets, pavilions, quilts, damaſks, &c. of various colours. Horſes, black cattle, and ſheep abound, and great quantities of cheeſe are made.

(2.) Otabalo, the capital of the above province, is a large city, and contains about 20,000 ſouls, among whom are many Spaniards.

(1.) * OTACOUSTICK. *n. ſ.* [ὠτα and ἀκουω; *otacouſtique*, French.] An inſtrument to facilitate hearing.—In a hare, which is very quick of hearing, it is ſupplied with a bony tube; which, as a natural *otacouſtick*, is ſo directed backward, as to receive the ſmalleſt and moſt diſtant ſound that comes behind her. *Grew's Coſmol.*

(2.) Otacoustick Instrument, or *Auricular Tube*, an inſtrument to facilitate the hearing. See Acoustics.

OTADINI. See Otodini.

OTAHA, one of the Society Islands, in the South Sea. It lies N. of Ulietea, and is ſeparated from it by a ſtrait, 2 miles broad. It has two good harbours. The people and the produce are ſimilar to thoſe of the other iſlands.

OTAHEITEANS, the natives of Otaheitee. See next article, § 4, 6, 8, 11—16.

(1.) OTAHEITEE, a celebrated iſland of the South Sea, diſcovered by Captain Wallis in 1767; viſited in 1768, by M. Bougainville; and by Captain Cook in 1773 and 1774, who had in 1769 ſailed round the iſland in a boat to obſerve the tranſit of Venus. Lon. from 149. 13. to 150. 0. W. Lat. from 17. 30. to 17. 48. N.

(2.) Otaheitee, appearance of. The iſland conſiſts of two diſtinct kingdoms, which are united by a narrow neck of land; the larger being called by the natives *Tiarrabou*, or *O-Taheite-Nue*; the ſmaller one *Opoureonou*, or *O-Taheite-Ete*. The circumference of both iſlands is about 40 leagues; the larger kingdom being divided into 43 diſtricts. The country has a delightful romantic appearance. The coaſt, viewed from the ſea, preſents a moſt beautiful proſpect, being elevated like an amphitheatre. The iſland is ſkirted with a reef of rocks, and towards the ſea is level, being covered with fruit trees of various kinds, particularly the cocoa-nut. About 3 miles from the ſhore, the country riſes into lofty hills terminated in peaks, covered with wood to the ſummits, from which large rivers are precipitated into the ſea. The ſtones everywhere appear to have been burnt.

(3.) Otaheitee, climate of. The air is extremely healthy and pleaſant; the heat is not troubleſome; and freſh meat will keep very well for two days. The winds do not blow conſtantly from the eaſt, but generally a little breeze from E. to SSE. The tide riſes very little; and, being governed by the winds, is very uncertain.

(4.) Otaheitee, Diseases and methods of cure in. Theſe iſlanders, who inhabit huts expoſed to all the winds, and hardly cover the earth, which ſerves them for a bed, with a layer of leaves, are remarkably healthy and vigorous, and live to old age without enduring any of its infirmities; their ſenſes are acute, and they retain their beautiful teeth to the laſt. There are, however, ſeveral ſorts of leprous complaints, which appear in cutaneous eruptions of the ſcaly kind; ſome were ſeen that had ulcers upon different parts of their bodies: yet they ſeemed little regarded by thoſe who were afflicted with them, and no application whatever was uſed to them, not ſo much as to keep off the flies. But the excellency of their climate, and the ſimplicity of their vegetable food, prevent almoſt all dangerous and deadly diſorders. They are ſometimes afflicted with the cholic, and coughs are not unknown among them; and the chiefs, who fare more ſumptuouſly, are ſometimes attacked with a diſorder ſimilar to the gout, in which the legs are ſwelled and exceſſively painful. M. de Bougainville's ſurgeon had ſeen many with marks of the ſmall pox. The uſual method employed here to reſtore the

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ſick to health, is by pronouncing a ſet form of words; after which the exorciſt applies the leaves of the cocoa-tree plaited to the fingers and toes of the ſick; ſo that nature is left to conflict with the diſeaſe, without being aſſiſted with any ſalutary application of art. The venereal diſeaſe was entailed upon theſe people by the crew of M. Bougainville's ſhips, who viſited this iſland a ſhort time after Captain Wallis had left it. The natives diſtinguiſhed it by a name of the ſame import with *rottenneſs*. However they had found a ſpecific cure for it, as none were ſeen on whom it had made a great progreſs, when captain Cook was there, in 1769.

(5.) OTAHEITEE, FERTILITY, SOIL, AND PRODUCE OF. The ſoil is a rich fat earth, of a blackiſh colour. It produces ſpontaneouſly, or with very ſlight culture, a great variety of the moſt excellent fruits; ſuch as bread-fruit, cocoa-nuts, bananas of 13 ſorts, plantains, potatoes, yams, ſugar-canes, ginger, turmeric; a fruit that grows in a pod like a large kidney-bean; a tree called *aubarra*, which produces fruit ſomething like the pine-apple, and which in the Eaſt-Indies is called PANDANES; a ſpecies of fern; and the Chineſe paper mulberry, of the bark of which they make their cloth; the AVA-AVA, the BARRINGTONIA, with many other rare plants, of which no deſcription can be given ſufficient to convey a juſt idea of them.

(6.) OTAHEITEE, FOOD, COOKERY, AND MANNER OF LIVING IN. The food of the common people entirely conſiſts of vegetables. Theſe are, the bread-fruit, with bananas, plantains, yams, apples, and a ſour fruit, which, though not pleaſant by itſelf, gives an agreeable reliſh to roaſted bread-fruit, with which it is frequently beaten up: (See ARTOCARPUS, § 1—5.) The fleſh, which is reſerved for the tables of the great, is either, poultry, hogs, or dogs: the fleſh of their fowls is not well-taſted, but that of dogs is eſteemed by the natives beyond pork. The dogs are fed on vegetables and never allowed to taſte animal food. The ſmaller fiſh are generally eaten raw, as we eat oyſters: every thing that can be procured from the ſea is made an article of their food: To dreſs their food, they kindle a fire, by rubbing the end of one piece of dry wood upon the ſide of another. They then dig a pit about half a foot deep, and two or three yards in circumference; they pave the bottom with large ſtones, which they lay down very ſmooth and even, and then kindle a fire in it with dry wood, leaves, and the huſks of cocoa-nuts. When the ſtones are ſufficiently heated, they take out the embers, and rake up the aſhes on every ſide; they then cover the ſtones with a layer of green cocoa-nut leaves, and wrap up the animal that is to be dreſſed in the leaves of the plantain. When it is placed in the pit, they cover it with the hot embers, and lay upon them bread-fruit and yams, which are alſo wrapt up in the leaves of plantain. They are quite unacquainted with the method of boiling water, as they have no veſſels among them that will bear the fire. Their general drink is water, or the milk of the cocoa-nut. They ſhowed in general an averſion to ſtrong liquors; and when one of them happened to drink ſo freely with any of the ſhip's company as to be intoxicated, he reſolutely refuſed to taſte any thing that was likely to produce the ſame effect again; but they have a plant called *ava-ava*, from the root of which they procure a liquor which has an inebriating quality. See AVA-AVA. The quantity of food which they eat at a meal is prodigious. Captain Cook ſays, he has ſeen one man devour 2 or 3 fiſhes as big as a perch; three bread-fruits, each bigger than two fiſts; 14 or 15 plantains, or bananas, each 6 or 7 inches long and 4 or 5 round, and near a quart of the pounded bread-fruit. Men of rank are conſtantly fed by their women. They have alſo a kind of fermented paſte called *mahie*. (See ARTOCARPUS, § 5.) The men and women never eat together.

(7.) OTAHEITEE, FOWLS, QUADRUPEDS, INSECTS AND FISH OF. The domeſtic poultry reſemble thoſe of Europe; there are alſo wild ducks, green turtle-doves, large pigeons, ſmall paroquets, with beautiful red, blue, and green feathers, kingsfiſhers, large cuckoos, and blue herons. There were no quadrupeds but dogs, hogs, and rats. No frogs, toads, ſcorpions, centipedes, or any kind of ſerpent, have been found here: there are ants, however, but not numerous. There is great variety of excellent fiſh.

(8.) OTAHEITEE, FUNERAL CEREMONIES IN. When one of them was dead they placed the corpſe in the open air till the bones became quite dry: a ſhed was erected cloſe by the houſe where the deceaſed had reſided; it was about 15 feet long, and 11 broad; one end was left quite open; the other end, and the two ſides, were partly incloſed with a ſort of wicker-work. The bier was a frame of wood, like that on which the ſea beds, called *cots*, are placed, with a matted bottom, and ſupported by four poſts, at the height of about four feet from the ground. The body was covered firſt with a mat, and then with white cloth; by the ſide of it lay a wooden mace, one of their weapons of war; and near the head of it, which lay next to the cloſe end of the ſhed, lay two cocoa-nut ſhells; at the other end a bunch of green leaves, with ſome dried twigs, all tied together, were ſtuck in the ground, by which lay a ſtone about as big as a cocoa-nut. Near theſe lay one of the young plantain leaves that are uſed for emblems of peace, and cloſe by it a ſtone ax. At the open end of the ſhed alſo hung, in ſeveral ſtrings, a great number of palm-nuts; and without the ſhed was ſtuck up in the ground, a ſtem of a plantain tree, about ſix feet high, upon the top of which was placed a cocoa-nut ſhell full of freſh water; againſt the ſide of one of the poſts hung a ſmall bag, containing a few pieces of bread-fruit ready roaſted. The food ſo placed by the corpſe is deſigned as an offering to their gods. They caſt in, near the body, ſmall pieces of cloth, on which the tears and blood of the mourners, have been ſhed; for in their paroxyſms of grief it is an univerſal cuſtom to wound themſelves with a ſhark's tooth. The mourner is always a man; and he is dreſſed in a very ſingular habit. When the bones are ſtripped of their fleſh, and become dry, they are buried. As ſoon as a native of Otaheitee is dead, the houſe is filled with relations, who deplore their loſs; ſome by loud lamentations, ſome by leſs clamorous, but more genuine expreſſions of grief. Thoſe who

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who are in the neareſt degree of kindred, and are really affected by the event, are ſilent; the reſt are one moment uttering paſſionate exclamations in a chorus, and the next laughing and talking without the leaſt appearance of concern. In this manner the remainder of the day on which they aſſemble is ſpent, and all the ſucceeding night. On the next morning the body is ſhrouded in their cloth, and conveyed to the ſea-ſide, on a bier which the bearers ſupport upon their ſhoulders, attended by the prieſt, who having prayed over the body repeats his ſentences during the proceſſion. When it arrives at the water's edge, it is ſet down upon the beach; the prieſt renews his prayers, and taking up ſome of the water in his hands, ſprinkles it towards the body, but not upon it. It is then carried back 40 or 50 yards; and ſoon after brought again to the beach, where the prayers and ſprinkling are repeated. It is thus removed backwards and forwards ſeveral times; and while theſe ceremonies have been performing, a houſe has been built, and a ſmall ſpace of ground railed in. In the centre of this houſe, or *tupapow*, poſts are ſet up to ſupport the bier, which is at length conveyed thither, and placed upon it; and here the body remains to putrify, till the fleſh is wholly waſted from the bones. As ſoon as the body is depoſited in the tupapow, the women aſſemble, and are led to the door by the neareſt relation, who ſtrikes a ſhark's tooth ſeveral times into the crown of the chief mourner's head; the blood copiouſly flows, and is carefully received upon pieces of linen, which are thrown under the bier. The reſt of the women follow this example; and the ceremony is repeated at the interval of 2 or 3 days, as long as the zeal and ſorrow of the parties hold out. The tears alſo which are ſhed upon theſe occaſions, are received upon pieces of cloth, and offered as oblations to the dead. Whilſt theſe ceremonies are carrying on by the women, the men ſeem to be wholly inſenſible of their loſs; but two or three days after, they alſo begin to perform a part. The neareſt relations take it in turn to aſſume the dreſs, and perform the offices. The chief mourner carries in his hand a long flat ſtick, the edge of which is ſet with ſharks teeth; and in the frenzy, which his grief is ſuppoſed to have inſpired, he runs at all he ſees, and if any of them happen to be overtaken, he ſtrikes them moſt unmercifully with his indented cudgel, which cannot fail to wound them in a dangerous manner. The proceſſions continue at certain intervals for five moons; but are leſs and leſs frequent, by a gradual diminution, as the end of that time approaches. The mourning which is worn here is an head-dreſs of feathers, the colour of which is conſecrated to death, and a veil over the face. The whole nation is ſaid to appear thus on the death of their king. The mourning for fathers is very long. The women mourn for their huſbands, but not the huſbands for their wives.

(9.) OTAHEITEE, GOVERNMENT OF. The government of the Otaheiteans ſeem greatly to reſemble the early ſtate of the European nations under the feudal ſyſtem. Their orders of dignity are *earee-rahie*, which anſwers to king; *earee*, baron; *manahouni*, vaſſal; and *towtow*, villain. There are two kings in the iſland, one being ſovereign of each of the peninſulas. Each of them is treated with great reſpect by all ranks, but does not appear to be inveſted with ſo much power as is exerciſed by the earees in their own diſtricts. When the king, whom they called *O-Too*, made a viſit to Captain Cook, the chiefs, who happened to be there before him, immediately ſtripped themſelves in great haſte. Captain Cook took notice of it; upon which they ſaid *earee, earee*, ſignifying, that it was on account of O-Too being preſent; but this was the only outward token of reſpect they paid him, for they never roſe from their ſeats, or made any other obeiſance. The *earees* are lords of one or more of the diſtricts into which each of the peninſulas is divided, and of which there are 43 in the larger one. Theſe parcel out their territories to the *manahounis*, who ſuperintend the cultivation of the ground. The loweſt claſs, called *towtows*, ſeem to be nearly under the ſame circumſtances with the villains in feudal governments. They do all the laborious work, cultivate the land, catch fiſh, fetch wood and water, &c. Each of the earees keeps a kind of court, and has a great number of attendants; chiefly the younger brothers of their own tribe; and among theſe ſome hold particular offices, but of which little more is known than ſome of their names. But the obedience, which the *towtows* yield to their chiefs, is very remarkable. They are not ſuffered to taſte any animal food, although they are employed in feeding it for their lords. They endure patiently very ſevere blows, and all this paſſive ſpirit is preſerved without any power lodged in the hands of the king to enforce it; for he uſes no military force, nor is attended with guards. There are but few actions which are reckoned crimes among the Otaheiteans. Adultery, however, is ſometimes puniſhed with death: but in general, the woman eſcapes with a ſevere beating, and the gallant paſſes unnoticed. The regulation of public juſtice is not confined to the magiſtrate; for the injured party redreſſes his own wrong by inflicting whatever puniſhment he can upon the offender: but in matters of notorious wrong, the chiefs ſometimes interpoſe. The nobility have livery for their ſervants; and in proportion as the maſter's rank is more or leſs elevated, theſe faſhes are worn higher or lower, being faſtened cloſe under the arms of the ſervants belonging to the chiefs, and going round the loins of thoſe belonging to the loweſt claſs of nobility. Several parts of the iſland ſeem to be private property, which deſcend to the heir of the poſſeſſor on his death, and the deſcent ſeems to fall indifferently on man or woman.

(10.) OTAHEITEE, HOUSES OF. The chief uſe which they make of their houſes is to ſleep; for unleſs it rains, they eat in the open air under a tree. Theſe houſes are ſheds, built in the wood between the ſea and the mountains; they are erected on an oblong ſquare; their width is nearly half their length; they are nothing more than a roof, not quite 4 feet from the ground, raiſed on 3 rows of pillars. The roof reſembles our thatched houſes in England, and conſiſts of two flat ſides inclining to each other, thatched with palm leaves.

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The floor is covered with hay; over which they ſpread mats. Some of theſe are furniſhed with a ſtool, and a few blocks of wood, which being ſquare, one ſide is hollowed into a curve; and theſe they uſe as pillows, and with their apparel they cover themſelves. In theſe open dwellings the whole family repoſe themſelves at night.

(11.) OTAHEITEE, INHABITANTS OF. The inhabitants of Otaheitee are a ſtout, well made, active, and comely people. The ſtature of the men, in general, is from 5 feet 7 to 5 feet 10 inches: the talleſt men ſeen by Captain Wallis meaſured 6 feet 3½ inches; and Captain Cook, in his 2d voyage, deſcribes O-Too, the king of Otaheitee, to be of that height. They are of a pale brown complexion; in general their hair is black, and finely friz zled; they have black eyes, flat noſes, large mouths, and fine white teeth; the men wear their beards in many faſhions; all of them pluck out a great part of it, and have prominent bellies. The women, in general, are much ſmaller, eſpecially thoſe of the lower ranks or towtows, which is attributed to their early and promiſcuous intercourſe with the men; whilſt the better ſort, who do not gratify their paſſions in the ſame unbridled manner, are above the middle ſtature of Europeans. Their ſkin is moſt delicately ſmooth and ſoft; they have no colour in their cheeks; their noſe is generally ſomewhat flat, but their eyes are full of expreſſion, and their teeth beautifully even and white. "The women," ſays M. de Bougainville, "have features not leſs agreeable than the generality of Europeans, and a ſymmetry of body and beautiful proportion of limbs, which might vie with any of them. Some have their hair brown, red, or flaxen, in which they are exceptions to all the natives of Aſia, Africa, and America, who have their hair black univerſally; here, in the children of both ſexes, it is generally flaxen. The ſtrongeſt expreſſion is painted in the countenances of theſe people; their walk is graceful, and all their motions are performed with great vigour and eaſe."

(12.) OTAHEITEE, LANGUAGE OF THE PEOPLE OF. The language of theſe iſlanders is ſoft and melodious; it abounds with vowels, and the pronunciation of it is eaſily acquired; but it was found very difficult to teach the natives to pronounce a ſingle Engliſh word; but Spaniſh and Italian words ending in a vowel, they pronounced with the greateſt eaſe. A ſufficient acquaintance has not been formed with it to determine whether it is copious or not; but it is totally without inflexion either of nouns or verbs. Few of the nouns have more than one caſe, and few of the verbs have more than one tenſe. It was impoſſible to teach the iſlanders to pronounce the name of their gueſts. They called Captain Cook *Toote*, Mr Hicks, the firſt lieutenant, *Hete*, &c. and thus they formed names for almoſt every man in the ſhip.

(13.) OTAHEITEE, MANNERS AND CHARACTER OF THE PEOPLE OF. The Otaheiteans are very induſtrious, and friendly in their diſpoſitions; but like all other nations not fully civilized, their paſſions are extremely violent, and they are very fickle. Their propenſity to theft is very great, inſomuch, that M. Bougainville ſays, "even in Europe itſelf, one cannot ſee more expert filchers than the people of that country." They are extremely laſcivious, even beyond credibility. To ſuch a degree do they carry their libidinous exceſſes, that a number of the principal people have formed themſelves into a ſociety, in which every woman is common to every man. This ſociety is named *Arreoy*, the members of which have meetings from which all others are excluded. At theſe meetings the paſſions are excited by a ſtudied courſe of ſenſuality, and the coarſeſt and moſt brutal pleaſures are enjoyed by the whole company. If, however, any of the female members prove with child, unleſs ſhe can procure ſome man to adopt the child as his own, not all the ſtrong affections of a mother can ſave the life of the precondemned innocent; but the child as ſoon as born is ſmothered, and the mother is left at liberty to renew her former courſe of execrable proſtitution. Should any man co-operate with a woman in ſaving the life of a child, they are both excluded for ever from the *arreoy*, and are conſidered as man and wife. Both men and women waſh their whole bodies three times a-day in running water, and are remarkably cleanly in their clothes. They are moſt expert ſwimmers, being accuſtomed to the water from their infancy. Some of theſe people continue a conſiderable time under water; and the velocity with which they go down, was very ſurpriſing. "Their countenances (ſays Capt. Cook), very remarkably expreſs the abundant good nature which they poſſeſs, and are entirely free from that ſavage keenneſs which marks nations in a barbarous ſtate. Their peaceable diſpoſition is evinced from the friendly reception all ſtrangers have met with who have viſited them. Inſtead of offering to attack them openly or clandeſtinely, as has been the caſe with moſt of the inhabitants of theſe ſeas, they have never appeared in the ſmalleſt degree hoſtile, but on the contrary, like the moſt civilized people, have courted an intercourſe with their viſitors by bartering, which is the only medium that unites all nations in a ſort of friendſhip."

(14.) OTAHEITEE, MANUFACTURES AND TOOLS OF. The principal manufacture among the Otaheiteans is their cloth. This is made of the bark of trees, which are of three kinds, viz. the Chineſe mulberry tree, or *aouta*; the bread-fruit tree, or *ooroo*; and one that is deſcribed by Dr Hawkeſworth as reſembling the wild fig tree of the Weſt Indies. Of all theſe the paper mulberry affords the beſt cloth; what is made from that being both finer, ſofter, whiter, and better ſuited to take a colour; the *ooroo* produces cloth much inferior in contexture; and the laſt is very coarſe, in colour reſembling the darkeſt brown paper; but this laſt is the only kind that withſtands water. (See BARK, § 3.) They likewiſe prepare a red dye; which is made by mixing the yellow juice of a ſmall ſpecies of fig, which the natives call *matee*, with the greeniſh juice of a ſort of fern of bindweed, or of ſeveral other plants, which produce a bright crimſon: and this the women rub with their hands, if the piece is to be uniformly of a colour; or they make uſe of a bamboo reed, if the piece is to be marked or ſprinkled into different patterns. Matting is another manufacture; they make finer mats

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mats than any made in Europe. Rushes, grass, the bark of trees, and the leaves of a plant called *whaarrou*, are the materials which they work up for this purpose. Their matting is applied to various uses: the coarser kind is employed for sleeping on in the night, or sitting on through the day; the finer sort is converted into garments in rainy weather, their cloth being soon penetrated by wet. They are very dexterous in making basket and wicker-work: their baskets are of a vast number of different patterns, many of them exceedingly neat; and the making them is practised by both sexes. Instead of hemp, they make ropes and lines of the bark of a tree; and thus they are provided with fishing-nets: the fibres of the cocoa nut furnish them with thread, with which they fasten the different parts of their canoes, &c. The bark of a nettle which grows in the mountains, called *orawa*, supplies them with excellent fishing-lines, capable of holding any kind of fish; and their hooks are made of mother-of-pearl, to which they fix a tuft of hair, made to resemble the tail of a fish. The point is turned inwards. They make also a kind of seine of a coarse broad grass, the blades of which are like flags. These they twist and tie together in a loose manner, till the net, which is about as wide as a large sack, is from 60 to 80 fathoms long. This they haul in smooth shoal water; and its own weight keeps it so close to the ground that scarcely a single fish can escape. They make harpoons of cane, and point them with hard wood; with which they can strike more effectually than an European can with one headed with iron. The tools used by the Otaheiteans for all their purposes are, an adze made of stone; a chisel or gouge made of bone, generally the bone of a man's arm between the wrist and elbow; a rasp of coral, and the skin of a sting-ray; also coral and sand, as a file or polisher: and with these they fell timber, cleave, and polish it, and hew stone. The stone which makes the blade of their adzes is a kind of basaltes, of a grey or blackish colour, not very hard, but of considerable toughness: they are formed of different sizes; some that are intended for felling, weigh from 7 to 8 lb.; others for carving not above two ounces. With such tools they generally take up several days in felling a tree; but after it is down, and split into planks, they smooth them very dexterously and expeditiously with their adzes, and can take off a thin coat from a whole plank without missing a stroke.

(15.) OTAHEITEE, PECULIAR CUSTOMS, DRESS AND ORNAMENTS USED IN. The men of consequence on the island wear the nails of their fingers long, as a badge of distinction. The woman always cut their hair short round their heads. Both sexes have a custom of staining their bodies, which they call TATTOWING; both men and women have the hinder part of their thighs and loins marked very thick with black lines in various forms; these marks are made by striking the teeth of an instrument somewhat like a comb just thro' the skin, and rubbing into the punctures a kind of paste made of soot and oil, which leaves an indelible stain. Both sexes are gracefully clothed, in a white cloth made of the bark of a shrub. Their dress consists of two pieces of this cloth; one of them, having a hole in the middle to put the head through, hangs from the shoulders to the mid-leg before and behind; another piece, between 4 and 5 yards long, and about one broad, they wrap round the body; this cloth is made like paper, of the macerated fibres of the inner bark spread out and beaten together. Their ornaments are feathers, flowers, pieces of shell, and pearls; the pearls are worn chiefly by the women. In wet weather they wear matting of different kinds, as their cloth will not bear wetting.

(16.) OTAHEITEE, POPULATION OF. Captain Cook was of opinion, that the number of inhabitants on the whole island amounted to 204,000, including women and children.

(17.) OTAHEITEE, PRIESTHOOD OF. The priesthood seems to be hereditary in one family or tribe; and is said to be numerous. These priests are professedly the men of science; but their knowledge is altogether frivolous and useless, for it consists in being conversant with the names of their different divinities, and such absurd traditions as have been handed down among them from one generation to another. The cure of their bodies is committed to the priests, and much parade is used in their attempts to recover the sick, though their remedies consist of ridiculous ceremonies and enchantments rather than any thing else. The marriages are merely secular contracts; but no one has a right to perform tattowing except the priests; and this being a custom universally adopted by the natives, it may be supposed that the performing it is a very lucrative employment. The males in general undergo a kind of circumcision, which is likewise the exclusive privilege of the priests to perform. But what most establishes the credit of this order of men is their skill in astronomy and navigation.

(18.) OTAHEITEE, RELIGION OF THE PEOPLE OF. As to their notions respecting the origin of the world, nothing can be more ridiculous. They imagine that the Supreme Deity, besides many female descendants, has one son named *Tane*; and to him they direct their worship, though they do not believe that the good or bad conduct of mankind on earth makes them more or less acceptable to him. They believe the existence of the soul after death, and of a greater or less degree of happiness to be then enjoyed; but they seem to have no conception of a state of punishment hereafter. The share of happiness they imagine every individual will enjoy in this future state, will be assigned to him according to the rank he holds on earth. We are not however told, wherein they suppose the happiness of this future state to consist; but it is most probably a Mohammedan paradise; for these voluptuaries can hardly be supposed capable of imagining any pleasure independent of the intercourse of the sexes. On this island was seen the figure of a man constructed of basket-work, rudely made, but not ill designed; it was something more than seven feet high, and rather too bulky in proportion to its height. This wicker skeleton was completely covered with feathers, which were white where the skin was to appear, and black in the parts which it is their custom to paint or stain, as well as upon the head, which was designed to represent hair. The image was called *Manioe*;

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Manoa; it was a repreſentation of *Mauwe*, one of their Eatuas, or gods of the ſecond claſs, and was ſaid to be the only one of the kind in Otaheitee. Theſe people pray at ſun-riſe and ſun-ſet. They have alſo a number of ſuperſtitious practices, to conciliate the influence of evil genii. The morais are uſed both as burying grounds and places of worſhip; they are approached with the moſt wonderful expreſſions of reverence and humility; and this, becauſe they there worſhip an inviſible being, for whom they entertain the moſt reverential reſpect, although not excited by the hope of reward or the dread of puniſhment.

(19.) OTAHEITEE, SACRIFICES IN. Captain Cook, who had ſome reaſon to believe that, among the religious cuſtoms of this people, human ſacrifices were ſometimes offered up to their deities, went to a morai, or place of worſhip, accompanied by Captain Furneaux, having with them a ſailor who ſpoke the language tolerably well, and ſeveral of the natives. In the morai was a tupapow, a kind of bier, with a ſhed erected over it, on which lay a corpſe and ſome proviſions. Captain Cook then aſked if the plaintain were for the Eatua? If they ſacrificed to the Eatua hogs, dogs, fowls, &c.? To all of which an intelligent native anſwered in the affirmative. He then aſked if they ſacrificed men to the Eatua? He was anſwered *taatoo eno*, "bad men they did; firſt beating them till they were dead." He then aſked if good men were put to death in this manner? His anſwer was no. Many other queſtions were put to him; all his anſwers to which ſeemed to confirm the idea, that men for certain crimes were condemned to be ſacrificed to the gods, provided they did not poſſeſs any property which they might give for their redemption. It ſeems to reſt with the high-prieſt to ſingle out the victims for ſacrifice; who, when the people are aſſembled on any ſolemn occaſion, retires alone into the houſe of their god, and ſtays there for ſome time; when he comes out, he informs the aſſembly he has ſeen and converſed with the great god, and that he has aſked for a human ſacrifice; and tells them he has deſired ſuch a perſon, naming a man preſent, who has probably rendered himſelf obnoxious to this ghoſtly father. The words are no ſooner gone out of his mouth, than the devoted wretch is put to death; for his guilt cannot be doubted, after the oracle has pronounced his doom.

(20.) OTAHEITEE, VESSELS, BOATS, CANOES, &c, OF. Their boats or canoes are of three different ſorts. Some are made out of a ſingle tree, and hold from two to ſix men. Theſe are principally employed in fiſhing; the others are conſtructed of planks very dexterouſly ſewed together; they are of different ſizes, and will hold from 10 to 40 men; they generally laſh two of theſe together, and ſet up two maſts between them; or if they are ſingle, they have only one in the middle; and in theſe veſſels they will ſail far beyond the ſight of land. The third ſort ſeems to be principally deſigned for pleaſure. Theſe are very large, but have no ſail; and in ſhape reſemble the gondolas of Venice. The plank of which theſe veſſels are conſtructed, is made by ſplitting a tree, with the grain, into as many thin pieces as poſſible. The boards are brought to the thickneſs of about an inch, and are afterwards fitted to the boat with the ſame exactneſs that might be expected from an expert joiner. To faſten theſe planks together, holes are bored with a piece of bone, fixed into a ſtick for that purpoſe. Through theſe holes a kind of plaited cordage is paſſed, ſo as to hold the planks ſtrongly together. The ſeams are caulked with dry ruſhes; and the whole outſide of the veſſel is painted over with a kind of gummy juice, which ſupplies the place of pitch.

(21.) OTAHEITEE, WEAPONS OF WAR USED IN. Their weapons are ſlings, which they uſe with great dexterity; pikes headed with the ſkins of ſting-rays, and clubs of about ſix or ſeven feet long, made of a very hard wood. Thus armed, they fight with great obſtinacy, and give no quarter to man, woman, or child, who happens to fall into their hands during the battle, nor for ſome time afterwards, till their paſſion ſubſides. They have likewiſe bows and arrows; but the arrows are good for nothing except to bring down a bird, being headed only with ſtone, and none of them pointed. They have targets of a ſemicircular form, made of wicker-work, and plaited ſtrings of the cocoa-nut fibres, covered with gloſſy, bluiſh green feathers belonging to a kind of pigeon, and ornamented with many ſharks teeth, arranged in three concentric circles.

OTAKOOTAIA, an iſland in the S. Pacific Ocean, three miles in circumference, diſcovered by Captain Cook, in 1777. The chief trees were cocoa palms; among which were ſeen cuckoos, curlews, herons, and great numbers of noddies. Lon. 201. 37. E. Lat. 19. 51. S.

OTALGIA, the EAR-ACH. See MEDICINE, *Ind.*

OTANES, one of the ſeven Perſian lords who conſpired againſt the uſurper Smerdis. He was promoted by Darius over the coaſt of Aſia Minor; and took Byzantium. See PERSIA.

OTCHAKOV, a ſtrong fortified city of Ruſſia, in Ekaterinoſlaf, at the mouth of the Dnieper, on the coaſt of the Black Sea. It is an ancient town, and was founded by a colony of Mileſians, who called it OLBIA. It was alſo named from them *Miletopolis*, and BORYSTHENES from the river. It was a place of great importance to the Turks, who kept a numerous garriſon in it, when in their poſſeſſion; as it afforded a ſafe harbour for their galleys againſt the corſairs. But in 1737 it was beſieged by the Ruſſians, under Count Munich, who, in three days, took it by aſſault. In 1738, however, the Ruſſians evacuated it, and the Turks retained it till 1789, when it was again beſieged by a numerous body of Ruſſians, under Prince Potemkin; who, after an unſucceſsful attempt to take it by ſtorm on the 1ſt Sept. opened trenches for a regular ſiege on the 5th. The Turks defended it with the utmoſt bravery till the 17th Dec. when, after a moſt obſtinate conteſt, the powder magazine of the fort was blown up by a ſhell, and the city was taken by ſtorm; 6000 Turks were killed, and 3000 taken priſoners; while the loſs of the Ruſſians was not leſs than 4000. Catherine II. annexed it to her empire, and the Ruſſians ſtill retain it. It appears to be the ſame with *Ockakow*; and the facts above quoted from Mr Cruttwell, appear to be more accurate than thoſe of other geographers,

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geographers, inſerted under that article. See OCZAKOW. It is 200 miles E. of Jaſſi, and 376 NNE. of Conſtantinople. Lon. 30. 20. E. of Ferro. Lat. 46. 44. N.

OTCHI-HOTUN, a town of Aſia, 150 miles NE. of Caſhgur. Lon. 102° E. of Ferro. Lat. 40. 46. N.

OTEAVANOOA, a large ſpacious harbour and bay of the Society Iſlands, on the SW. coaſt of Bolabola. Lon. 151. 43. W. Lat. 16. 30. S.

OTELANDS, or OATLANDS, a village of Surry, near Weybridge. It had formerly a royal palace, wherein Henry duke of Glouceſter, 3d ſon to king Charles I. was born; and had a deer park, which in the civil wars was by the parliamentarians laid open, and the houſe demoliſhed. In 1673 there was a brick wall remaining, which encompaſſed ten acres; but there were then ſmall traces of the chief pile, beſides the gardener's lodge, wherein was the ſilk-worm room raiſed by king James I.'s queen. It is now a moſt magnificent building, and commands a moſt extenſive proſpect. In the park there was a paddock, where Q. Elizabeth uſed to ſhoot with a croſs-bow. It is now the property of his R. H. the Duke of York, who purchaſed it for 43,000l. of the Duke of Newcaſtle, in 1789.

OTFORD, a town of England, in Kent, on the Darent, at the bottom of a hill. In 793 there was a battle at this place between the two Saxon kings, Offa of Mercia and Alrick of Kent, who was killed by Offa; and another in 1016, wherein the Daniſh king Canute was routed by King Edmund Ironſide. Offa, to atone for the blood he had ſhed in that battle, gave this place to Chriſt-church, Canterbury (as the deed ſays), *in paſcua porcorum*, "for feeding the archbiſhop's hogs;" and ſo it remained in the archbiſhop's liberty, till exchanged with King Henry VIII. for other lands. There was a chantry founded at the Ryehouſe in this pariſh. The church was once a chapel to Shoreham.

* OTHER. *pron.* [*other*, Saxon; *autre*, French.] 1. Not the ſame; not this; different. In this ſenſe it ſeems an adjective, yet in the plural, when the ſubſtantive is ſuppreſſed, it has contrarily to the nature of adjectives a plural termination; as, *of laſt week three days were fair, the* others *rainy*. —Of good actions ſome are better than *other* ſome. *Hooker*.—

Who dares receive it *other*? *Shak. King Lear*. —The diſmayed matrons and maidens, ſome in their houſes, *other* ſome in the churches, with floods of tears and lamentable cries, poured forth their prayers to the Almighty. *Knolles*.—To think, that men live together by no *other* rules but that of beaſts, where the ſtrongeſt carries. *Locke*.—No leaſes ſhall ever be made, *other* than leaſes for years not exceeding thirty-one. *Swift*. 2. Not I, or he, but ſome one elſe; in this ſenſe it is a ſubſtantive, and has a genitive and plural.—

I ſhould cut off the nobles for their lands;
Deſire his jewels and this *other's* houſe. *Shak*.
—Some *others* are ſo regular in proceeding according to art, as they reſpect not the condition of the patient. *Bacon*.—The confuſion ariſes, when the one will put their fickle into the *other's* harveſt. *Leſley*.—Never be idle, whilſt *others* are in want of any things that your hands can make for them *Law*.—

The king had all he craved or could compel,
And all was done—let *others* judge how well.
Daniel.

3. Not the one, not this, but the contrary.—There is on the *other* ſide, that odious deformity in vice, that it never offers itſelf to the affections of mankind, but under the diſguiſe of the *other*. *South*. 4. Correlative to *each*. In lowlineſs of mind let *each* eſteem *other* better than themſelves. *Phil*. ii. 3.

Scotland and thou did *each* in *other* live. *Dryd*. 5. Something beſides.—The learning of Latin being nothing but the learning of words, join as much *other* real knowledge with it as you can. *Locke on Educ*. 6. The next.—

Thy air,
Thou *other* gold-bound brow, is like the firſt;
A third is like the former. *Shak. Macbeth*.

7. The third paſt.—

Bind my hair up; as 'twas yeſterday;
No, nor the t' *other* day. *Ben Jonſon*.

8. It is ſometimes put elliptically for *other thing*; ſomething different.—I can expect no *other* from thoſe that judge by ſingle fights and raſh meaſures. *Glanville*.

OTHERA, in botany, a genus of the monogynia order, belonging to the tetrandria claſs of plants. They have monopetalous flowers on a double fruit, and the ſtyle bifid.

* OTHERGATES. *adv.* [*other* and *gate*, for way.] In another manner.—If ſir Toby had not been in drink, he would have tickled you *othergates* than he did. *Shak*.

* OTHERGUISE. *adv.* [*other* and *guiſe*. This is often pronounced and ſometimes written *otherguiſs*.] Of another kind.

* OTHERWHERE. *adv.* [*other* and *where*.] In other places.—As Chriſtians they were of neceſſity forced *otherwhere* to aſſemble themſelves. *Hooker*.

His godlike acts, and his temptations fierce,
And former ſufferings, *otherwhere* are found.
Milton.

* OTHERWHILE. *adv.* [*other* and *while*.] At other times.

* OTHERWISE. *adv.* [*other* and *wiſe*.] 1. In a different manner.—The ſame we ought to embrace, whether we have received it by writing or *otherwiſe*. *Hooker*.—They, being therein left each to their own choice, may either do as others do, or elſe *otherwiſe*, without any breach of duty at all. *Hooker*.—The evidences for ſuch things are not ſo infallible, but that there is a poſſibility that the things may be *otherwiſe*. *Wilkins*.—What all others ſhould practiſe, we ſhould ſcarce know to practiſe *otherwiſe*. *Spratt*.—

Thy father was a worthy prince,
And merited, alas! a better fate;
But heaven thought *otherwiſe*. *Addiſon's Cato*.

2. By other cauſes.—Sir John Norris failed in the attempts of Liſhorn, and returned with the loſs, by ſickneſs and *otherwiſe*, of eight thouſand men. *Raleigh*. 3. In other reſpects.—The beſt men *otherwiſe* are not always the beſt in regard of ſociety. *Hooker*.—Men ſeldom conſider God any *otherwiſe* than in relation to themſelves. *Rogers*.

OTHIN. See MYTHOLOGY, § 41, and ODIN.

OTHNIEL, the third Judge of Iſrael, the ſon of Kenaz,

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Kenaz, of the tribe of Judah. (See ISRAEL, § I. 3.) We are told (Josh. xv. 17. and Judges i. 13.) that he was Caleb's younger brother. But if Caleb and Othniel had been brothers, the latter could not have married his niece Achsaw the daughter of Caleb. The scripture mentions Kenaz as father to Othniel, and Jephunneh as the father of Caleb. It is therefore supposed, that Kenaz and Jephunneh were brothers, and that Othniel and Caleb were cousin-germans, and in this sense to be brothers according to the language of scripture. Thus Achsah being but second-cousin in respect of Othniel, he might marry her consistently with the letter of the law. The heroism, by which he obtained Achsah, is recorded in Joshua xv. 16, 17: and the still greater heroism by which he delivered his country from the oppressions of CHUSHAN-RISHATHAIM, A. M. 2599, is recorded in Judges iii. 9–11. Whether he judged Israel during the 40 years of peace that followed, is uncertain.

(1.) OTHO, a tribune of the people, who, in Cicero's consulship, made a regulation to permit the Roman knights at public spectacles to have the 14 first rows after the seats of the senators. This was opposed with virulence by some, but Cicero ably defended it.

(2.) OTHO, M. Salvius, the 8th emperor of Rome, born A. D. 32, of a family descended from the ancient kings of Etruria. He was among the number of Nero's favourites, was raised to the highest offices of the state, and made governor of Pannonia by the interest of Seneca, who wished to remove him from Rome, lest Nero's love for Poppæa should prove his ruin. After Nero's death, Otho conciliated the favour of Galba the new emperor; but when Galba refused to adopt him as his successor, he procured his assassination, and made himself emperor. He was acknowledged by the senate, but the sudden revolt of Vitellius in Germany rendered his situation very precarious. Otho obtained 3 victories, but in a general engagement near Brixellum his forces were defeated, and he stabbed himself when all hopes of success had vanished, in the 37th year of his age, after a reign of about 3 months. The last moments of Otho's life were those of a philosopher. He comforted his soldiers who lamented his fortune, and expressed his concern for their safety, when they solicited to pay him the last friendly offices before he stabbed himself; and he observed, that it was better that one man should die, than that all should be involved in ruin on account of his obstinacy. His nephew was much affected, and feared the anger of the conqueror; but Otho observed, that Vitellius would be kind to the relations of Otho, since, in the time of their greatest enmity, the mother of Vitellius had received every friendly treatment from his hands. He also burnt the letters which, by falling into the hands of Vitellius, might provoke his resentment against those who had favoured the cause of an unfortunate general. These noble and humane sentiments in a man who was the associate of Nero's shameful pleasures, and who had stained his hand in the blood of his master, have appeared surprising, and have passed for policy, and not the result of a virtuous and benevolent heart. His father was a favourite of Claudius.

(3–6.) OTHO, I. II. III. and IV. emperors of Germany. See GERMANY, § 14, 15; and ITALY, § 18, 19, and 26.

(7.) OTHO VENIUS. See VENIUS.

OTHOMAN, the first emperor of the Turks, from whom the empire has since been styled the *Ottoman empire*. See TURKEY.

OTHONNA, in botany; *African Ragwort*, a genus of the polygamia necessaria order, belonging to the syngenesia class of plants; and in the natural method ranking under the 49th order, *Compositæ*. The receptacle is naked; there is almost no pappus; the calyx is monophyllous, multifid, and nearly cylindrical.

OTHRYADES, one of the 300 Spartans who fought against 300 Argives, when those two nations disputed their respective right to Thyreata. Two Argives, Alcinor and Cronius, and Othryades, survived the battle. The Argives went home to carry the news of their victory; but Othryades, who had been reckoned among the number of the slain on account of his wounds, recovered himself, and carried some of the spoils of which he had stripped the Argives into the camp of his countrymen; and after he had raised a trophy, and had written with his own blood the word *vice* on his shield, he killed himself, unwilling to survive the death of his countrymen.

OTHRYS, a mountain, or chain of mountains in Thessaly; said to have been the residence of the Centaurs. *Herodot.* vii, 129. *Virg. Æn.* vii, 675.

OTHUMA, a town of Arabia, in Yemen, 80 miles NNE. of Mocha. Lon. 43. 57. E. Lat. 14. 32. N.

OTHUS and EPHIALTES, in the mythology, two giants, sons of Neptune by Iphimedia, the wife of the giant Aloeus; who educated them as his own, whence they were called *Aloeides*. They grew 9 inches every month, and were only 9 years old, when they made war against the gods; but were slain by Apollo and Diana. They built the town of Asera, at the foot of Mount Helicon.

OTIBAR, a town of Spain, in Grenada.

OTIS, in ornithology, a genus of birds belonging to the order of grallæ. There are 4 species, principally distinguished by their colour. One of these,

OTIS TARDA, the BUSTARD, is the largest of the British land fowls; the male at a medium weighing 25 lb.; there are instances of some very old ones weighing 27: The breadth 9 feet; the length near 4. Besides the size and difference of colour, the male is distinguished from the female by a tuft of feathers about 5 inches long on each side of the lower mandible. Its head and neck are ash-coloured: the back is barred transversely with black and bright rust-colour: the greater quill-feathers are black: the belly white: the tail is marked with broad red and black bars, and consists of 20 feathers: the legs are dusky. See *Plate* CCLXI. The female is about half the size of the male: the crown of the head is of a deep orange, traversed with black lines; the rest of the head is brown. The lower part of the fore side of the neck is ash-coloured: in other respects it resembles the male, only the colours of the back and wings are far more dull. These birds inhabit most of the open countries of the S. and E. parts of England, from

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from Dorſetſhire, as far as the Wolds in Yorkſhire. They are exceeding ſhy, and difficult to be ſhot; run very faſt, and when on the wing can fly, though ſlowly, many miles without reſting. They take flight with difficulty, and are ſometimes run down with greyhounds. They keep near their old haunts, ſeldom wandering above 20 or 30 miles. Their food is corn and other vegetables, and thoſe large earth worms that appear in great quantities on the Downs before ſun-riſing in the ſummer. Theſe are replete with moiſture, anſwer the purpoſe of liquids, and enable them to live long without drinking, on thoſe extenſive and dry tracts. Beſides this, the males have an admirable magazine for their ſecurity againſt drought, being a pouch, whoſe entrance lies immediately under the tongue, and which is capable of holding near 7 quarts; this they fill with water, to ſupply the hen when ſitting, or the young before they can fly. Buſtards lay only two eggs, of the ſize of thoſe of a gooſe, of a pale olive brown, marked with ſpots of a dark colour; they make no neſt, only ſcrape a hole in the ground. In autumn they are (in Wiltſhire) generally found in large turnip fields near the Downs, and in flocks of 50 or more.

OTLEY, a town of England, in the W. Riding of Yorkſhire, under a cliff called *Chevin*, on the S. ſide of the river Wherfe. The adjacent parts are reckoned the moſt delightful in England. Its church is elegantly fitted up, and has ſeveral ancient monuments. The adjacent country is much improved, and from the Chevin is a moſt beautiful view of an extenſive ſcope of undeſcribed manſions. This manor was given by Athelſtan to the ſee of York, whoſe archbiſhop had a palace here, with ſeveral extenſive privileges. It has a free grammar ſchool, founded by Mr Cave, in 1611, called *Prince Henry's School*. In 1673, it ſuffered much by an inundation; which carried away ſeveral bridges, mills, &c. as well as much corn, &c. It is 25 miles W. of York, and 202 NNW. of London. Lon. 1. 48. W. Lat. 53. 54. N.

OTMARSCH, a town of Holland, in the department of the Yſſel, and late prov. of Overyſſel. 15 miles N. of Odenzeel.

OTODINI, Ottadini, or Ottodini, a nation of ancient Britons, ſeated on the NE. of the Brigantes, in the countries now called Northumberland, Merſe, and the Lothians. As the Otodini are not mentioned by any of the Roman hiſtorians, but only by Ptolemy, it is uncertain whether they formed a diſtinct independent ſtate, or were united with the Brigantes. They were, however, a conſiderable people, and poſſeſſed a long tract of the ſea coaſt, from the Tyne to the Frith of Forth. Their name is derived by Baxter from the old Britiſh words *Ot o dineu*, which ſignify *a high and rocky ſhore*; deſcriptive enough of their country. They were probably reduced by Agricola at the ſame time with their more powerful neighbours the Brigantes; but as they lived without the wall of Severus, they were, like the reſt of the Mæatæ, engaged in frequent revolts. In the moſt perfect ſtate of the Roman government in this iſland, the country of the Otodini made a part of the Roman province called Valentia; which comprehended all that large tract between the two walls. As this province was never long together in the peaceable poſſeſſion of the Romans, they had but few ſtations in the country of the Otodini, except thoſe on the line of the wall of Severus. Various opinions are entertained among the learned reſpecting the real ſituation of the Otodini, and it is even doubtful whether their country was in England or in Scotland. The celebrated Drummond of Hathornden contends for the latter. From Dr Henry's deſcription above quoted, it appears to have been in part of both.

OTOGAMIES, a nation of N. American Indians, who reſide in the North-Weſtern Territory, between the Miſſiſippi and the lake of the Woods. They have 300 warriors.

OTOORACITE, an iſland in the S. Pacific Ocean, near the coaſt of Otaheite.

OTOQUE, an iſland of S. America, in Panama Bay. Lon. 81. 10. W. Lat. 7. 50. N.

OTOROWA, a town of Poland, in Poſnania, 16 miles W. of Poſan.

OTOULINGOU, a town of Chineſe Tartary, Lon. 136. 2. E. Ferro. Lat. 43. 54. N.

(1.) OTRANTO, or Terra d'Otranto, a province of Naples; bounded on the N. by Terra di Bari and the gulph of Venice; on the E. by the ſame gulph, and on the S. and W. by a great bay between that and the Baſilicata. It is a mountainous country, abounding in figs, olives, and wine. It is often viſited by locuſts and tarantulas, and by Algerine pirates, who carry off all the people they can catch into ſlavery. But to keep them off, there are many forts on the coaſts.

(2.) Otranto, the capital of the above province, has a commodious harbour, an archbiſhop's ſee, and a ſtrong citadel, where the archbiſhop reſides. Mr Swinburn gives this account of it: "It is ſmall, ſtands on a hill, and contains only 3000 inhabitants. Its little harbour is not ſo bad, but it might induce more people to ſettle here, as no port on the coaſt lies ſo convenient for traffic with Greece. The Adriatic gulph is here but 60 miles wide. I climbed to the top of a tower, to get a ſight of the Acroceraunian mountains; but a vapour hanging over the ſea, hid them from my view: in a clear morning, their ſnowy tops are very viſible. The cathedral is Gothic, and, according to the Puglian faſhion, has its ſubterraneous ſanctuary. The columns are of beautiful marble and granite; the pavement, a rude ſpecies of moſaic, commonly called *Saracenic*. Theſe moſaics are compoſed of pieces of porphyry, ſerpentine, and cubes of gilt glaſs,—diſpoſed in ſtars, circles, or chequers. The compartments of the ſtalls are bordered with them; and the ſmall twiſted columns which ſupport the pulpit and canopies are ornamented with a ſpiral ſtripe of the ſame work. Otranto was a Roman colony, as is certified by an inſcription, almoſt the only monument of antiquity left there. In the 10th century it was made an archbiſhop's ſee. In 1400, Laurence de Medicis, to deliver himſelf from the attacks of the king of Naples, perſuaded Mahomet II. to invade the realm; and Otranto was the unfortunate place where the Turks landed. It was inveſted, ſtormed, and pillaged. Its prelate was ſlain at the door of his church: 800 principal citizens dragged out of the gates and

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and butchered; their bodies left 12 months unburied, till the duke of Calabria retook the city, and committed them to hallowed earth." It lies 37 miles SE. of Brindisi; 94 of Bari, and 206 E. of Naples. Lon. 18. 35. E. Lat. 40. 20. N.

OTRAU, a town of Moravia, in Prerau.

OTRICOLI, a small town of Italy, in the ecclesiastical state, and in the duchy of Spoleto, on a rising ground on the frontiers of the patrimony of St Peter. From this town is seen a fine plain, and some of the windings of the Tiber. The ruins scattered at the entrance of the plain, descending from Otricoli, are thought to be the remains of the ancient OCRICULUM; they consist of fragments of columns, cornices, and other pieces of marble. In the middle of the great street of Otricoli, there is a marble pedestal with an incription, showing they had erected a statue to Julia Lucilla, who had built public baths at Otricoli at her own expence. Near this town the French, under Gen. M'Donald, defeated a party of the Austrians under Gen. Mack, on the 26th Nov. 1798. It is 32 miles N. of Rome. Lon. 12. 23. E. Lat. 42. 26. N.

OTSEGO, a county, lake, and town of New York, bounded N. by Oneida county; NE. by Montgomery; E. by Schoharie; S. by Ulster, and W. by Tyoga, counties. It contains 9 townships, and about 3600 citizens. Sugar, made from the maple tree, is the chief manufacture. In 1791, 300 chests, of 400 lb. each, were exported. Cooperstown is the capital.

OTTA, a town of Portugal, in Estremadura, 24 miles NNE. of Lisbon.

OTTACANO, a town of Naples, in Lavora.

OTTADINI. See OTODINI.

OTTATI, a town of Naples, in Principato Citra; 10 miles SW. of Cangiano.

OTTAVO, a town of Naples, in Bari; 11 miles SSE. of Monopoli.

OTTAWA, a river in the S. of Bohemia.

OTTAWAS, two nations of North American Indians; both in the North Western Territory: viz. 1. a tribe who reside on the banks of Lake Huron, near Suiganam bay, and have 150 warriors; 2. a tribe who reside near Detroit, and have about 500 warriors; 3. a river in Canada.

(1.) OTTENDORF, a town of Saxony, in Lauenburg, on the Meden; 24 miles N. of Stade.

(2, 3.) OTTENDORF, 2 towns; 1. in Bohemia, 2 miles SE. of Branau: 2. in Austria, 4 miles SW. of Ebrnsprunn.

OTTENGRUN, a town of Upper Saxony, in Vogtland; 6 miles SW. of Oelsnitz.

OTTENSHEIM, a town of Austria, on the Danube; 5 miles NW. of Lintz.

(1.) * OTTER. *n. s.* [*oter*, Saxon; *lutra*.] An amphibious animal that preys upon fish.—The toes of the *otter's* hinder feet, for the better swimming, are joined together with a membrane, as in the beaver; from which he differs principally in his teeth, which are canine; and his tail, which is feline, or a long taper: so that he may not be unfitly called *putoreus aquaticus*, or the water polecat. He makes himself burrows on the waterside, as a beaver; is sometimes tamed and taught, by nimbly furrounding the fishes, to drive them into the net. *Grew.*—At the lower end of the hall is a large *otter's* skin stuffed with hay. *Addison.*—

Would you preserve a num'rous finny race?
Let your fierce dogs the rav'nous *otter* chase. *Gay.*

(2.) OTTER, in zoology. See MUSTELA, N° 11. —18.

(3.) OTTER, in geography, an island near the coast of Norway, in Romsdale Bay.

(4.) OTTER, a river of England, which runs into the sea, 5 m. E. of Exmouth, in Devonshire.

(5.) OTTER CREEK, a large river of Vermont, called by the French Lotris, which rises in Bromley, Bennington county; and after running about 90 miles through Rutland and Addison counties, &c. falls into Lake Champlain at Ferrisburg. It has large cataracts at Rutland, Pittsford, Middlebury and Vergennes. Vessels of any burden may sail up to Vergennes.

(6.) OTTER OF ROSES. See ROSES, N° 19.

OTTERBERG, a town of France in the dep. of Mont Tonnere, and late Palatinate of the Rhine; 5 miles N. of Kayserslautern.

OTTERBURN, a town of Northumberland, near Ellesdon. It was the field of battle between the English and Scots in 1388, wherein Henry Percy, called *Hotspur*, was taken prisoner, and Douglas the Scotch general was killed. On this battle was founded the delightful old ballad of *Chevy-chase*; the village being situated by the river Rhead, on the south side of the Cheviot hills. The entrenchments are still visible; and a number of tumuli scattered over the adjacent ground mark the slaughter made there. It lies 21 miles from Morpeth.

OTTEROEN, a river of Norway. See NORWAY, § 15.

OTTERSBERG, } 2 towns of Saxony, in Bre-
OTTERSEE, } men; the former 34 miles S. of Slade and 16 E. of Bremen; the latter 2 miles from it.

OTTERY, ST MARY'S, a market town in Devonshire, 159 miles W. of London, and 10 miles E. of Exeter. Its market is on Tuesday, and it has two fairs. The church is very ancient, and resembles a cathedral. A very extensive woollen manufactory is established here by Sir Geo. Yonge and Sir John Duntze, Barts. It derived its name, from the Otter, and that from the otters formerly found in it. This town was given by king Edward the Confessor to the church of St Mary at Rouen in Normandy; but was afterwards bought by Grandison Bp. of Exeter; who made of it a quarter college in 10 Edward III. and therein placed secular priests, with other ministers, to whom he gave the whole manor, parish, tythes, fines, spiritual profits, &c. which amounted to L. 304, 2s. 10d. yearly.

OTTMUCHAN, a town of Silesia, in Neisse.

OTTO. See OTHO.

OTTOBEUREN, a town and abbey of Suabia, 25 miles SSE. of Ulm, and 32 SW. of Augsburg.

OTTOBONI, Peter, was born in 1620; entered into orders, and was made a cardinal in 1652; and at last elected pope in 1689, when he assumed the name of Alexander VIII. He died August 31. 1691. See ALEXANDER VIII.

OTTODINI. See OTODINI.

OTTOK, a town of Croatia, 28 miles SW. of Carlstadt.

OTTO-

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OTTOMAN PORTE, a title given by Europeans to the Grand Signior, or the Turkish emperor; from OTHOMAN, the first emperor of the Turks. It is also used metaphorically for the Turkish power, and often simply the *Porte* by way of emphasis.

OTTONA, a town of Naples, on the Adriatic, 43 miles E. of Aquileia. Lon. 14. 50. E. Lat. 42. 28. N.

OTTONE, a town of Italy, 21 miles NE. of Genoa.

OTTOSCHAZ. See ARUCIA.

OTTWEILER, a town of France, in the dep. of Monte Tonnere, and late duchy of Nassau Saarbruck; 13 miles N. of Saarbruck and 40 SE. of Treves.

OTUBUE, an island in the S. Pacific Ocean near Bolabola.

OTUMPA, a town of St Jago del Estero, where native iron is found. See IRON, § I, 8.

OTURA, a town of Spain, in Grenada.

OTWAY, Thomas, an eminent tragic poet, the son of Mr Humphry Otway, rector of Wolbeding in Sussex; was born at Trottin in that county on the 3d March 1651. He was educated at Oxford; but went to London, where he commenced player, with indifferent success. However, the sprightliness of his conversation gained him the favour of Charles Fitz-Charles earl of Plymouth, who procured him a cornet's commission in one of the regiments sent into Flanders; but he returned in very necessitous circumstances, and applied himself again to writing for the stage. In comedy he has been deemed too licentious; which, however, was no great objection to his pieces in the profligate days of Charles II. But, in tragedy, few English poets have ever equalled him; and perhaps none ever excelled him in touching the tender passions. There is generally something familiar and domestic in the fable of his tragedies, and there is amazing energy in his expression.—The heart that doth not melt at the distresses of his *Orphan* must be hard indeed! But though Otway possessed in so eminent a degree the rare talent of writing to the heart, yet he was not always successful in his dramatic compositions. Dr Johnson gives this account of his death: "He died in a manner which I am unwilling to mention. Having been compelled by his necessities to contract debts, and hunted, as is supposed, by terriers of the law, he retired to a public-house on Tower-hill, where he died of want; or, as it is related by one of his biographers, by swallowing, after a long fast, a piece of bread which charity had supplied. He went out, as is reported, almost naked, in the rage of hunger, and finding a gentleman in a neighbouring coffee-house, asked him for a shilling. The gentleman gave him a guinea; and Otway going away bought a roll, and was choaked with the first mouthful. All this, I hope, is not true; but that indigence, and its concomitants sorrow and despondency, brought him to the grave, has never been denied." The Doctor adds, that "Otway had not much cultivated versification, nor much replenished his mind with general knowledge. His principal power was in moving the passions, to which Dryden in his latter years left an illustrious testimony. He appears, by some of his verses, to have been a zealous royalist; and had what was in those times the common reward of loyalty; he lived and died neglected."—His dramatic writings are 9 in number; the most admired are, *The Orphan* and *Venice Preserved*. He also made some translations, and wrote several miscellaneous poems. His whole works are printed in two pocket volumes. He wrote four acts of a play, which are lost.

OVAGIK, a town of Turkey, in Natolia.

OUAIS, a river and bay of Cape Breton, in the Gulf of St Lawrence.

(1.) * OVAL. *adj.* [*oval*, Fr. *ovum*, Lat. an egg.] Oblong; resembling the longitudinal section of an egg.—The mouth is low and narrow, but, after having entered pretty far in the grotto, opens itself on both sides in an *oval* figure of 100 yards. *Addison.*—

Mercurius, nearest to the central sun,
Does in an *oval* orbit, circling run. *Blackmore.*

(2.) * OVAL. *n. s.* An *oval* is that which has the shape of an egg. *Watts.*

(3.) OVAL is an oblong curvilinear figure, otherwise called *ellipsis*. (See ELLIPSIS.) However, the proper oval, or egg shape, differs considerably from that of the ellipsis, being an irregular figure, narrower at one end than at another: whereas the ellipsis, or mathematical oval, is equally broad at each end: though it must be owned, these two are commonly confounded together; even geometricians calling the oval a *false ellipsis*.

OUALO, or HOUAL, a kingdom of Africa, on the banks of the Senegal, and coast of the Atlantic; 96 miles long, from E. to W. and 18 broad from N. to S. The soil is rich, producing great quantities of maize, rice, legumes, indigo, cotton, tobacco, and palm trees; the meadows feed numerous herds of cattle; and game and wild fowls are plentiful and very various. The petty monarch of this territory assumes the title of emperor.

(1.) OUAN, a town of China, in Quang-tong.

(2.) OUAN, a town of Corea, 53 miles SW. of Koang.

OUANAMINTHE, a town of Hispaniola, on the N. coast, 4½ miles W. of Diaxabon.

OUANNE, a town of France, in the dep. of Yonne, 9 miles SW. of Auxerre, and 12 N. of Clamecy.

OUAN-NGAN, } 2 towns of China, in Kiang-
OUAN-NIEN, } si; the former 38 miles N. of Kan-tcheou: the latter 20 miles SE. of Yao-tcheou.

OUAQUAPHENOGAW, a large lake of Georgia, between the Flint and the Oakmulgee. It is 300 miles in circumference, has several islands, and in wet seasons, appears like an inland sea.

OVAR, a town and castle of Hungary; 16 miles WNW. of Rosenburg.

OUARDAN, a town of Egypt, on the banks of the Nile; 25 miles NW. of Cairo.

OVARIA. See ANATOMY, *Index*.

* OVARIOUS. *adj.* [from *ovum*.] Consisting of eggs.—

He, to the rocks
Dire clinging, gathers his *ovarious* food. *Thomf.*

OVARIUM, in botany, the germen or seed-bud, containing the rudiments of the future seed. See BOTANY, *Glossary*.

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OUARVILLE, a town of France, in the dep. of the Eure and Loire, and diſtrict of Janville; 10½ miles NNW. of Janville, and 12 SE. of Chartres. From this town the celebrated BRISSOT took his title; and his fondneſs for *England* and *Engliſh Liberty* led him to alter the orthography, by ſubſtituting the Anglo-Saxon letter W, (a letter which is not in the French alphabet) for the French diphthong OU, and ſtiling himſelf *De Warville*.

(1.) * OVARY. *n. ſ.* [*ovaire*, Fr. *ovarium*, Latin.] The part of the body in which impregnation is performed,—The *ovary*, or part where the white involveth it, is in the ſecond region of the matrix. *Brown.*

(2.) OVARY. See ANATOMY, § 322.

OUASIOTO MOUNTAINS, mountains in N. Carolina and Virginia, NW. of the Laurel mountains.

(1.) * OVATION. *n. ſ* [*ovation*, Fr. *ovatio*, Latin.] A leſſer triumph among the Romans, allowed to thoſe commanders who had won a victory without much bloodſhed, or defeated ſome leſs formidable enemy. *Dict.*

(2.) *The* OVATION generally began at the Albanian mountain, whence the general with his retinue made his entry into the city on foot, with many flutes or pipes ſounding in concert as he paſſed along, and wearing a garland of myrtle as a token of peace. The term *ovation*, according to Servius, is derived from *ovis*, *a ſheep*; becauſe on this occaſion the conqueror ſacrificed a ſheep, as in triumph he ſacrificed a bull. The ſenate, knights, and principal plebeians, aſſiſted at the proceſſion; which concluded at the Capitol, where rams were ſacrificed to Jupiter. The firſt ovation was granted to Publius Poſthumius the conſul, for his victory over the Sabines A. U. C. 253.

* OUBAT. } *n. ſ.* [*eruca piloſa*, Lat.] A ſort of
* OUBUST. } caterpillar; an inſect. *Dict.*

OUCARRA, a town of Indoſtan, in Myſore, 5 miles S. of Sattimanglum.

OUCENTA, a town of Naples, in Lavora.

(1.) * OUCH. *n. ſ.* An ornament of gold or jewels.—*Ouches* or ſpangs, as they are of no great coſt, ſo they are of moſt glory. *Bacon.*

(2.) * OUCH of a boar. The blow given by a boar's tuſk. *Ainſworth.*

OUCHANG, a town of China, in Se-tchuen.

OUCHE, a river of France, which runs into the Saone, 4 miles below Dijon.

OUCHTERARDER, } and all ſimilar names;
OUCHTERGAVEN, } ſee AUCHTERARDER,
OUCHTERTOUL, } AUCHTERGAVEN, &c.

OUDAL, a town of Norway, in Aggermus.

(1.) OUDE, a province of Indoſtan Proper, on both ſides of the Ganges; bounded on the N. by mountains which ſeparate it from Thibet; E. by Bahar; S. by Allahabad; and W. by Agra. Its length, according to Major Rennel, is 360 miles from E. to W. and its breadth from 150 to 180. It is one continued plain, being a continuation of that extenſive level valley through which the Ganges and its branches run. It is the central part of the ancient kingdom of the PRASII. It is ſubject to a Nabob, who is in alliance with the Britiſh; and a brigade of the Bengal army is ſtationed on his weſtern frontier, to cover Bengal, as well as Oude, and keep the weſtern ſtates in awe. The expenſe is paid by the Nabob, in an annual ſubſidy of 420,000l. LUCKOW is the capital.

(2.) OUDE, an ancient city in the above province to which it gave name, on the Ganges, near Fyzabad. It was anciently the firſt imperial city in Hindoſtan; and was built by the Indian hero *Kriſhen*. In Col. Dow's tranſlation of Feritſha's hiſtory, it is mentioned as the capital of a great kingdom, 1200 years before the Chriſtian æra: and it is as often mentioned in the *Mahaberet*, (a famous Indian work in the Shanſcrit language,) under the name of Adjudiah. But no traces of its former magnificence are left; being now almoſt deſerted, except that it is ſtill viſited by pilgrims from all parts of India, as a place of ſanctity.

(3.) OUDE, a river of Scotland, in Argyleſhire, which riſes in Loch Tralig, in Lorn, and falls into Loch Melfort in Kilninver.

OUDENARDE, a rich and ſtrong town of France, in the department of the Scheldt, and ci-devant province of Auſtrian Flanders. It is a large well fortified town, having a very conſiderable fort in the middle of it, ſituated on the Scheldt, which divides it into two parts. It is almoſt encompaſſed by meadows, only there is a hill which commands it on the S. ſide. The buildings are pretty good, and the ſtreets wide and handſome. In the market place is a beautiful town-houſe, and a fine large fountain. There are ſeveral good churches and monaſteries. The town has a flouriſhing trade in fine linen and tapeſtry. The French laid ſiege to it in 1708, which brought on an obſtinate engagement, wherein they were defeated by the allies under the D. of Marlborough, with the loſs of 3000 men killed, and 7000 priſoners. (See ENGLAND, § 75.) It was beſieged by the French again in 1744, and taken in a few days; but reſtored at the general peace, in 1748. It was ſurrendered to the French republicans, with 24 pieces of cannon, beſides magazines and ammunition, on the 3d July 1794. It is 12 miles S. of Ghent, 15 NE. of Tournay, and 27 W. of Bruſſels. Lon. 3. 49. E. Lat. 50. 51. N.

OUDENBERG, or } a town of France, in the
OUDENBURG, } dep. of the Lys, and late province of Auſtrian Flanders, 8 miles SE. of Oſtend, and 10 W. of Bruges. Lon. 3. 0. E. Lat. 51. 9. N.

OUDENBUSCH, or OUDENBOSCH, a town of Holland, in the dep. of the Dommel and Scheldt, and ci-devant province of Dutch Brabant, 10 miles W. of Breda.

OUDERKERCK, a town of Holland, in the dep. of Amſtel, and late province of S. Holland, 6 miles S. of Amſterdam.

OUDEWATER, a town of Holland, in the department of Delft, on the Little Yſſel, 10 miles SW. of Utrecht, and 20 S. of Amſterdam. In 1254, it received the privileges of a city: but in 1575, it was ſtormed, pillaged, and burnt, by the Spaniards. Among the many who were murdered on this occaſion, were the mother, ſiſters, and brothers of the celebrated James Arminius.

OUDIGHIR, a town of Indoſtan, in Dowlatabad, 5 miles NW. of Beder, and 110 NW. of Hydrabad.

OUDIN,

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OUDIN, Cafimir, a French monk, born at Mezieres in 1638. He publifhed a Supplement to Bellarmine, containing an account of the eccleſiaſtical writers omitted by him. He went to Leyden in 1690, turned proteſtant, was made librarian to the univerſity, and died there in 1717.

(1.) OUDIPOUR, CHEITORE, or MEYWAR, a province of Hindoſtan, one of the principal ſtates belonging to the Rajpoots. It is about 100 miles ſquare; and conſiſts of high mountains divided by narrow valleys, and of plains environed by mountains, acceſſible only by narrow paſſes, which render it very ſtrong; yet it is at preſent tributary to the Mahrattas. It has an extent of fertile arable land, ſufficient for the maintenance of a numerous people; and the climate is mild, as it lies between Lat. 24° and 28° N.

(2.) OUDIPOUR, CHEITORE, or MEYWAR, the capital of the above province, is a city of great extent, ſeated on the mountain; and was formerly the chief reſidence of the Ranah or Prince of the Rajpoots; but has fallen into decay within the laſt century. It is ſeated on the country of Agimere, 120 miles SSW. of Agimere city, 120 S. by E. of Nagpour, and 260 SW. of Agra. Lon. 74. 42. E. Lat. 24. 42. N.

OUDOBO, a country of Africa, ſubject to Benin.

(1.) OUDON, a river of France, which runs into the Orne at Caen, in the dep. of Calvados.

(2.) OUDON, a town of France, in the dep. of the Lower Loire, 15 miles NE. of Nantes.

OUDRI, John Baptiſt, a painter, born at Paris. He acquired the principles of his art under the celebrated Largilieres; and from him he had thoſe ſure principles of colouring which he communicated at a meeting of the academy of painting, of which he was a member, and one of the profeſſors. Oudri's ſuperior talent for painting animals is well known. He painted ſeveral huntingpieces for the king of France, which adorn ſome of the late royal caſtles, among others that of La Meute. Oudri was ſo well acquainted with the magic of his art, that he frequently pleaſed himſelf with painting white objects on white grounds; and theſe pictures have a good effect. He ſuperintended the manufactory of Beauvais, where pieces of tapeſtry were produced equally brilliant with the pictures which had ſerved for their model. The king gave him a penſion, and apartments in the Louvre. He died at Paris, May 1. 1755, aged 74.

OUDSONG, a fort in the iſle of Celebes.

OVE, a river of Spain, which joins the Deval, at Oviedo.

OUBI, a town of China, in Chan-ſi.

OVELGUNN, two towns in of Holſtein.

(1.) * OVEN. *n. ſ.* [*oven*, Saxon.] An arched cavity heated with fire to bake bread.—

He loudly bray'd that like was never heard,
And from his wide devouring *oven* ſent
A flake of fire. *Spenſer.*

—Here's yet in the world hereafter, the kneading, the making of the cake, the heat of the *oven*, and the baking. *Shak.*—Bats have been found in *ovens* and other hollow cloſe places, matted one upon another; and therefore it is likely that they ſleep in the winter, and eat nothing. *Bacon.*

(2.) *An* OVEN is a kind of domeſtic furnace, uſed for baking bread, pies, tarts, &c. of a circular ſtructure, with a very low roof, well lined, on the top, bottom, and ſides, with ſtone; it has a ſmall entrance in the front, which is exactly fitted by a kind of door. It appears from the kiln-burnt pottery which has been diſcovered in the Britiſh ſepulchres, and from the Britiſh appellation of an *odyn* or *oven*, that furnaces for baking were generally known among the original Britons. An odyn was, therefore, erected at the manſion of each Britiſh baron, for the uſe of himſelf and his retainers.

OUEN-TCHEOU, a city of China of the firſt rank, in the prov. of Tche-kian, on the mouth of a river near the coaſt, with a good harbour; 765 miles SE. of Peking. Lon. 138. 15. E. of Ferro. Lat. 28. 1. N.

OUEN-Y, and OUEN-YEN. } two towns of Corea; the former 90, and the latter 33 m. SSE. of Ou-tcheou.

OUEPAS, a town on the coaſt of Coſta Rica.

(1.) * OVER hath a double ſignification in the names of places, according to the different ſituations of them. If the place be upon or near a river, it comes from the Saxon *ovre*, a brink or bank; but if there is in the neighbourhood another of the ſame name, diſtinguiſhed by the addition of neither, then *over* is from the Gothic, *ufar*, above. *Gibſon's Camden.*

(2.) * OVER. *prep.* [*ufar*, Gothic; *ovre*, Sax.] 1. Above; with reſpect to excellence or dignity.—

How happy ſome *o'er* other ſome can be?
Thro' Athens I am thought as fair as ſhe. *Shak.*
Young Pallas ſhone conſpicuous *o'er* the reſt.
Dryden.
High, *over* all, was your great conduct ſhown,
You fought our ſafety, but forgot your own.
Dryden.

—The commentary which attends this poem will have one advantage *over* moſt commentaries, that it is not made upon conjectures. *Pope.*—It will afford field enough for a divine to enlarge on, by ſhowing the advantages which the Chriſtian world has *over* the Heathen. 2. Above, with regard to rule or authority. Oppoſed to *under*.—The church has authority *over* her biſhops, able to ſilence the factious. *South.*—Captain, yourſelf are the fitteſt to live and reign, not *over*, but next and immediately *under* the people. *Dryden.* 3. Above in place. Oppoſed to *below*.—

He was more than *over* ſhoes in love. *Shak.*
The ſtreet ſhould ſee as ſhe walkt *over* head.
Shak.
Thrice happy is that humble pair,
Beneath the level of all care;
Over whoſe heads thoſe arrows fly,
Of ſad diſtruſt and jealouſy. *Waller.*

4. Acroſs; from ſide to ſide: as, *he leaped* over *the brook*.—

Come *o'er* the brook Beſſy to me;
She dares not come *over* to thee. *Shak.*

—Certain lakes and pits, ſuch as that of Avennes, poiſon birds which fly *over* them. *Bacon.*—

The geeſe fly *o'er* the barn. *Dryden.*

5. Through; diffuſively.—All the world *over*, thoſe that received not the commands of Chriſt and his doctrines of purity and perſeverance, were ſignally

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ſignally deſtroyed. *Hammond.* 6. Upon.—Wiſe governors have as great a watch *over* fames, as they have of the actions and deſigns. *Bacon.*—

Angelic quires
Sung heav'nly anthems of his victory
Over temptation and the tempter proud. *Milt.*

7. Before. This is only uſed in *over* night.—

On their intended journey to proceed,
And *over* night whatſo thereto did need.
Hubberd.

8. It is in all ſenſes written by contraction *o'er.*

(3.) * OVER. *adv.* 1. Above the top.—Good meaſure, preſſed down, and ſhaken together, and running *over. Luke,* vi. 38. 2. More than a quantity aſſigned.—The laws of nature and reaſon be of neceſſary uſe; yet ſomewhat *over* and beſides them is neceſſary. *Hooker.*—He that gathered much had nothing *over,* and he that gathered little had no lack. *Ex.* xvi. 18.—The ordinary ſoldiers having all their pay, and a month's pay *over,* were ſent into their countries. *Hayward.*—The eaſtern people determined their digit by the breadth of barley-corns, ſix making a digit, and twenty-four a hand's-breadth: a ſmall matter *over* or under. *Arbuthnot.* 3. From ſide to ſide.—The fan of an Indian king, made of the feathers of a peacock's tail, compoſed into a round form, bound altogether with a circular rim, above a foot *over. Grew.*—This golden cluſter the herald delivereth to the Tirſan, who delivereth it *over* to that ſon that he had choſen. *Bacon.* 5. From a country beyond the ſea.—It hath a white berry, but is not brought *over* with the coral. *Bacon.*

They brought new cuſtoms and new vices *o'er.* *Phillips.*

6. On the ſurface.—The firſt came out red all *over. Geneſis.* 7. Paſt. This is rather the ſenſe of an adjective.—Soliman pauſing upon the matter, the heat of his fury being ſomething *over,* ſuffered himſelf to be intreated. *Knolles.*—Look back upon anger when the fit is *over. Bacon.*—

To ſit and taſte, till this meridian heat
Be *over,* and the ſun more cool decline. *Milt.*

—The act of ſtealing was ſoon *over. Taylor.*—He will, as ſoon as his firſt ſurprize is *over,* begin to wonder how ſuch a favour came to be beſtowed on him. *Atterbury.*—

With me alas! with me thoſe joys are *o'er.*
Pope.

8. Throughout; completely.—

Have you read *o'er* the letters I ſent you?
Shak.

—Let them argue *over* all the topics of divine goodneſs and human weakneſs, yet how trifling muſt be their plea? *South.* 9. With repetition; another time.—

He *o'er* and *o'er* divides him. *Shak.*
In the ſame verſe, the ſame rules *o'er* and *o'er.*
Dryden.

Longing they look, and gaping at the fight,
Devour her *o'er* and *o'er* with vaſt delight.
Dryden.

Thou, my Hector, art thyſelf alone;
My parents, brothers, and my lord in one:
O kill not all my kindred *o'er* again. *Dryden.*

—When children forget, or do an action aukwardly, make them do it *over* and *over* again, till they are perfect. *Locke.*—It would be the doing that *over* again which hath been done already. *Atterbury.*—The moſt learned will never find occaſion to act *over* again what is fabled of Alexander the Great. *Watts.*—

He cramm'd his pockets with the precious ſtore,
And ev'ry night review'd it *o'er* and *o'er. Harte.*

10. Extraordinary; in a great degree.—The word ſymbol ſhould not ſeem to be *over* difficult. *Baker.* 11. OVER *and above.* Beſides; beyond what was firſt ſuppoſed, or immediately intended.—Moſes took the redemption money of them that were *over and above. Numb.* iii. 49.—He gathered a great maſs of treaſure, and gained *over and above* the good will and eſteem of all people wherever he came. *L'Eſtrange.* 12. OVER *againſt.* Oppoſite; regarding in front.—In Ticinum is a church with windows only from above. It reporteth the voice thirteen times, if you ſtand by the cloſe end of the wall, *over againſt* the door. *Bacon.*—I viſit his picture, and place myſelf *over againſt* it whole hours together. *Spectator.*—*Over againſt* this church ſtands a large hoſpital, erected by a ſhoemaker. *Addiſon.* 13. *To give over.* To ceaſe from.—

Theſe when they praiſe, the world believes no more,
Than when they promiſe to give ſcribbling *o'er.*
Pope.

14. *To give over.* To attempt to help no longer; as, *his phyſicians have* given *him* over; *his friends who adviſed him, have* given *him* over. 15. In compoſition it has a great variety of ſignifications; it is arbitrarily prefixed to nouns, adjectives, or other parts of ſpeech in a ſenſe equivalent to more than enough; too much.—

Modeſt wiſdom plucks me
From *over-credulous* haſte. *Shak.*

—St Hierom reporteth, that he ſaw a ſatyr; but the truth hereof I will not raſhly impugn, or *over-boldly* affirm. *Peacham.*—Theſe *over-buſy* ſpirits, whoſe labour is their only reward, hunt a ſhadow and chaſe the wind. *Decay of Piety.* If the ferment of the breaſt be vigorous, an *over-fermentation* in the part produceth a phlegmon. *Wiſeman.*—A gangrene doth ariſe in phlegmons, through the unſeaſonable application of *over-cold* medicaments. *Wiſeman.*—

Poets, like lovers, ſhould be bold and dare,
They ſpoil their buſineſs with an *over-care.*
Dryden.

Wretched man *o'erfeeds*
His cramm'd deſires, with more than nature needs. *Dryden.*

Bending o'er the cup, the tears ſhe ſhed,
Seem'd by the poſture to diſcharge her head,
O'er-fill'd before. *Dryden.*

—As they are likely to *over-flouriſh* their own caſe, their flattery is hardeſt to be diſcovered. *Collier.*—To check our *over-confidence* and preſumption, we might, by every day's experience, be made ſenſible of our ſhort-ſightedneſs. *Locke.*—This part of grammar has been much neglected, as by ſome others *over-diligently* cultivated. *Locke.*—It is an ill way of eſtabliſhing this truth, and ſilencing atheiſts, to take ſome men's having that idea of God in their minds for the only proof of a deity; and out of an *overfondneſs* of that darling invention,

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invention, cashier all other arguments. *Locke.*—Had this happened to him by an *over-dose* of honey when a child, all the same effects would have been mistaken, and the antipathy counted natural. *Locke.*—Take care you *over-burn* not the turf. *Mortimer.*—Don't *over-fatigue* the spirits, lest the mind be seized with a lassitude. *Watts.*—An *over-greedy* grasp does not retain the largest handful. *Watts.*

(4.) OVER MAGNA, } two English villages, SW.
(5.) OVER PARVA, } of Derby.

(1.) OVERA, OESE, or ARVERI, a kingdom of Africa, dependent on Benin.

(2.) OVERA, or OESE, the capital of the above kingdom, is seated on the river Formosa.

* *To* OVER-ABOUND. *v. n.* [*over* and *abound.*] To abound more than enough.—

So much does fructuous moisture *o'er-abound.*
Philips.

—The learned, never *over-abounding* in transitory coin, should not be discontented. *Pope's Letters.*

* *To* OVER-ACT. *v. a.* [*over* and *act.*] To act more than enough.—

You *over-act*, when you should underdo.
Ben. Jonson.

—Princes courts may *over-act* their reverence. *Stillingfleet.*—Good men often blemish the reputation of their piety, by *over-acting* some things in religion. *Tillotson.*—He *over-acted* his part. *Atterbury.*

OVERALL, John, a celebrated English bishop, born in 1559. After acquiring his grammar learning he was sent to St John's college, Cambridge; but removing to Trinity, was chosen fellow of that college. In 1596 he was made regius professor of divinity, and D. D. and elected master of Catherine-hall. In 1601 he was made dean of St Paul's, London, by the recommendation of Sir Fulk Greville and Q. Elizabeth; and in K. James's reign he was chosen prolocutor of the lower house of convocation. In 1612 he was appointed one of the first governors of the Charter-house hospital, then just founded by Thomas Sutton, Esq. In April 1614 he was made bishop of Litchfield and Coventry; and in 1618 he was translated to Norwich, where he died in May 1619, aged 60. He was buried in that cathedral, where, after the restoration, Cosin, Bishop of Durham, who had been his secretary, erected a monument to him, in 1669, with this inscription, *Vir undequaque doctissimus, et omni encomio major.* Wood says, he was the best scholastic divine in England; and Cosin says that he derived all his knowledge from him. He is also celebrated by Smith for his distinguished wisdom, erudition, and piety. In the controversy about predestination and grace, he held a middle opinion inclining to Arminianism. He seems indeed to have paved the way for the reception of that doctrine in England. The bishop is known in England chiefly by his *Convocation Book.*

* *To* OVER-ARCH. *v. a.* [*over* and *arch.*] To cover as with an arch.—

Brown with *o'er-arching* shades and pendant woods. *Pope.*

* *To* OVER-AWE. *v. a.* [*over* and *awe.*] To keep in awe by superior influence.—The king was present in person to *over-awe* these subjects with the terror of his sword. *Spenser on Ireland.*—

Her graceful innocence, her every air
Of gesture, or least action, *over-aw'd*
His malice. *Milton's Paradise Lost.*

—The empty title which inspired you with presumption, and *over-awed* my daughter to comply. *Guardian.*

A thousand fears
Still *over-awe* when she appears. *Granville.*

* OVER-BALANCE. *n. s.* [*over* and *balance.*] Something more than equivalent.—A mighty *over-balance* of our exported to our imported commodities. *Temple.*—The mind should be kept in a perfect indifference, not inclining to either side, any further than the *over-balance* of probability gives it the turn of assent and belief. *Locke.*

* *To* OVER-BALANCE. *v. a.* To weigh down; to preponderate.—Not doubting but by the weight of reason I should counterpoise the *over-balancings* of any factions. *King Charles.*—The 100,000*l.* per annum, wherein we over-balance them in trade, must be paid us in money. *Locke.*—Should a bare single possibility be of weight enough to *over-balance* them? *Rogers.*

* OVER-BATTLE. *adj.* [Of this word I know not the derivation; *batten* is to grow fat, and to *battle*, is, at Oxford, to feed on trust.] Too fruitful; exuberant.—In the church of God sometimes it cometh to pass, as in *over-battle* grounds. *Hooker.*

* *To* OVER-BEAR. *v. a.* [*over* and *bear.*] To repress; to subdue; to whelm; to bear down.—What more savage than man, if he see himself able by fraud to over-reach, or by power to *over-bear* the laws? *Hooker.*

My desire
All continent impediment would *o'erbear*,
That did oppose my will. *Shak. Macbeth.*

Young Laertes, in a riotous head,
O'erbears your officers. *Shak.*

Our counsel, it pleas'd your highness
To *over bear*. *Shak. King John.*

The bishop will be *over-borne* by thee. *Shak.*—The Turkish commanders assailed the city, thrusting their men into the breaches by heaps, as if they would, with very multitude, have discouraged or *over-borne* the Christians. *Knolles.*—The point of reputation, when news first came of the battle lost, did *overbear* the reason of war. *Bacon.*

Yet fortune, valour, all is *over-borne*
By numbers. *Denham.*

—A body may as well be *ouer-borne* by the violence of a shallow rapid stream as swallowed up in the gulph of smooth water. *L'Estrange.*

Crowding on the last the first impel;
Till *over-borne* with weight the Cyprians fell.
Dryden.

—The judgment, if swayed by the *over-bearing* of passion, and stored with lubricous opinions instead of clearly conceived truths, will be erroneous. *Glanville's Scepsis.*—Take care that the memory of the learner be not too much crowded with a tumultuous heap, or *over-bearing* multitude of documents at one time. *Watts.*—The horror or loathsomeness of an object may *over-bear* the pleasure which results from its greatness, novelty, or beauty. *Addison's Spectator.*

* *To* OVER-BID. *v. a.* [*over* and *bid.*] To offer more than equivalent.—

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You have *o'erbid* all my paſt ſufferings,
And all my future too. *Dryden's Spaniſh Fryar.*

(1.) * *To* OVER-BLOW. *v. n.* [*over* and *blow.*] To be paſt its violence.—

Led with delight, they thus beguile the way,
Until the bluſt'ring ſtorm is *over-blown. Spenſer.*
—All thoſe tempeſts being *over-blown*, there long after aroſe a new ſtorm. *Spenſer.*—

This ague fit of fear is *over-blown. Rich.* II.

Seized with ſecret joy,
When ſtorms are *over-blown. Dryden's Virgil.*

(2.) * *To* OVERBLOW. *v. a.* [*over* and *blow.*] To drive away as clouds before the wind.—

And when this cloud of ſorrow's *over-blown*,
Through the wide world we'll make her graces known. *Waller.*

* OVER-BOARD. *adv.* [*over* and *board.* See BOARD.] Off the ſhip; out of the ſhip.—Now he that was the cauſe of the tempeſt being thrown *over-board*, there were hopes a calm ſhould enſue. *Howel.*—A merchant having a veſſel richly fraught at ſea in a ſtorm, there is but one certain way to ſave it, which is, by throwing its rich lading *over-board. South.*—

The trembling dotard to the deck he drew,
And hoiſted up and *over-board* he threw. *Dryd.*
—He obtained liberty to give them only one ſong before he leaped *over-board. L'Eſtrange.*—The ſhock being ſometimes ſo violent, that it would throw the crew on the upper deck of leſſer ſhips *over-board. Arbuthnot.*

* *To* OVER-BULK. *v. a.* [*over* and *bulk.*] To oppreſs by bulk.—

The feeding pride,
In rank Achilles, muſt or now be cropt,
Or ſhedding, breed a nurſery of like evils,
To *over-bulk* us all. *Shak. Troil. and Creſſ.*

* *To* OVER-BURDEN. *v. a.* [*over* and *burthen.*] To load with too great weight.—If ſhe were not cloyed with his company, and that ſhe thought not the earth *over-burthened* with him, ſhe would cool his fiery grief. *Sidney.*

OVERBURY, Sir Thomas, a learned and accompliſhed Engliſh gentleman, was born in 1581, and ſtudied at Oxford. His intimacy with Sir Robert Carr procured him the honour of knighthood, and alſo occaſioned his death. When Sir Robert became Viſcount Rocheſter, he contracted an intimacy with the Counteſs of Eſſex, of which Sir Thomas diſapproved in ſo plain terms, that the Viſcount treacherouſly uſed his influence with the king to inſpire him with unjuſt ſuſpicions of the baronet, who was thrown into the Tower, where, in the courſe of a few months, he was poiſoned, in 1613. The treachery was afterwards diſcovered, but the murderers were only puniſhed with a temporary baniſhment from court. He publiſhed an account of his travels on the continent, and ſeveral poems.

* *To* OVER-BUY. *v. a.* [*over* and *buy.*] To buy too dear.—

He, when want requires, is only wiſe,
Who ſlights not foreign aids, nor *over-buys. Dryd.*

* *To* OVER-CARRY. *v. a.* [*over* and *carry.*] To hurry too far; to be urged to any thing violent or dangerous.—His natural affection and duty was leſs eaſy to be *over-carried* by ambition. *Hayward.*

* *To* OVER-CAST. *v. a.* part. *over-caſt.* [*over* and *caſt.*] 1. To cloud; to darken; to cover with gloom.—

The day with clouds was ſudden *over-caſt. Spenſer.*

Hie, Robin, *over-caſt* the night. *Shak.*
—Our days of age are ſad and *over-caſt. Raleigh's Hiſt.*

No cloud in ſo ſerene a manſion find,
To *over-caſt* her ever-ſhining mind. *Waller.*

Thoſe clouds that *over-caſt* our morn ſhall fly. *Dryd.*

The dawn is *over-caſt*, the morning lours. *Addiſon.*

2. To cover. This ſenſe is hardly retained but by needle-women, who call that which is incircled with a thread, *over-caſt.*—When malice would work that which is evil, the colour wherewith it *over-caſteth* itſelf is always a plauſible pretence of ſeeking to further that which is good. *Hooker.*—

Their arms abroad with gray moſs *over-caſt. Spenſer.*

3. To rate too high in computation.—The king, in his account of peace and calms, did much *over-caſt* his fortunes. *Bacon's Henry* VII.

* *To* OVER-CHARGE. *v. a.* [*over* and *charge.*] 1. To oppreſs; to cloy; to ſurcharge.—The heavy load of abundance, wherewith we oppreſs and *over-charge* nature, maketh her to ſink unawares. *Raleigh's Hiſt.*—A man may as well expect to grow ſtronger by always eating, as wiſer by always reading. Too much *over-charges* nature, and turns more into diſeaſe than nouriſhment. *Collier.* 2. To load; to crowd too much.—Our language is *over-charged* with conſonants. *Pope.*
3. To burthen.—

He whiſpers to his pillow
The ſecrets of his *over-charged* ſoul. *Shak.*

4. To rate too high.—

Here's Glo'ſter, a foe to citizens,
O'er-charging your free purſes with large fines. *Shak.*

5. To fill too full.

Her heart is but *o'er-charg'd. Shak.*
—The fumes of drink diſcompoſe and ſtupify the brain of a man *over-charged* with it. *South.*—If they would make diſtinct abſtract ideas of all the varieties in human actions, the number muſt be infinite, and the memory *over-charged* to little purpoſe. *Locke.*—The action of the Iliad and Æneid, in themſelves exceeding ſhort, are ſo beautifully extended by epiſodes, that they make up an agreeable ſtory, ſufficient to employ the memory without *over-charging* it. *Addiſon.*—6. To load with too great a charge.—

As cannons *over-charged* with double cracks. *Shak.*

Who in deep mines, for hidden knowledge toils,
Like guns *o'er-charged*, breaks, miſſes, or recoils. *Denham.*

* *To* OVER-CLOUD. *v. a.* [*over* and *cloud.*] To cover with clouds.—

The ſilver empreſs of the night
O'er-clouded, glimmers in a fainter light. *Tickel.*

* *To* OVER-CLOY. *v. a.* [*over* and *cloy.*] To fill beyond ſatiety.—

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A scum of Britons and base lackey peasants,
Whom their *o'er-cloyed* country vomits forth.
Shak.

(1.) * *To* OVERCOME. *v. a.* pret. *I overcame*; part. pass. *overcome*; anciently *overcomen*, as in *Spenser*. [*overcomen*, Dutch.] 1. To subdue; to conquer; to vanquish.—

They *overcomen*, were deprived
Of their proud beauty. *Spenser.*

This wretched woman, *overcome*
Of anguish rather than of crime hath been.
Spenser.

—Of whom a man is *overcome*, of the same is he brought in bondage. 2 *Pet.* ii. 19.

Fire by thicker air *o'ercome*. *Prior.*

2. To surmount.—There are sometimes little misfortunes that happen to them, which of themselves they could never be able to *overcome*. *Law.*

3. To overflow; to surcharge.—

Th' unfallow'd glebe
Yearly *o'ercomes* the granaries with stores.
Philips.

4. To come over or upon; to invade suddenly. Not in use.—

Can't such things be,
And *overcome* us like a summer's cloud,
Without our special wonder? *Shak.*

(2.) * *To* OVERCOME. *v. n.* To gain the superiority.—That thou mightest be justified in thy sayings, and mightest *overcome* when thou art judged. *Rom.* iii. 4.

* OVERCOMER. *n. s.* [from the verb.] He who overcomes.

* *To* OVER-COVER. *v. a.* [*over* and *cover*.] To cover completely.—

Shut me nightly in a charnel house,
O'er-covered quite with dead mens rattling bones.

* *To* OVER-COUNT. *v. a.* [*over* and *count*.] To rate above the true value.—

Thou know'st how much
We do *o'er-count* thee. *Shak.*

* *To* OVER-CROW. *v. a.* [*over* and *crow*.] To crow as in triumph.—A base varlet, that being but of late grown out of the dunghill, beginneth now to *overcrow* to high mountains. *Spenser.*

* *To* OVERDO. *v. a.* [*over* and *do*.] To do more than enough.—Any thing so *over-done* is from the purpose of playing. *Shak.*—Nature, so intent upon finishing her work, much oftener *over-does* than under-does. *Grew.*—When the meat is *over-done*, lay the fault upon your lady who hurried you. *Swift.*

* *To* OVER-DRESS. *v. a.* [*over* and *dress*.] To adorn lavishly.—

In all, let Nature never be forgot;
But treat the goddess like a modest fair,
Nor *over-dress*, nor leave her wholly bare.
Pope.

* *To* OVER-DRIVE. *v. a.* [*over* and *drive*.] To drive too hard, or beyond strength.—The flocks and herds with young, if men should *over-drive* one day, all will die. *Gen.* xxxiii. 13.

* *To* OVER-EMPTY. *v. a.* [*over* and *empty*.] To make too empty.—The women would be loth to come behind the fashion in new-fangledness of the manner, if not in costliness of the matter, which might *over-empty* their husbands purses. *Carew.*

* *To* OVER-EYE. *v. a.* [*over* and *eye*.] 1. To superintend. 2. To observe; to remark.—

I am doubtful of your modesties,
Left, *over-eyeing* of his odd behaviour,
You break into some merry passion. *Shak.*

* OVERFAL. *n. s.* [*over* and *fall*.] Cataract.—Tostatus addeth, that those which dwell near those falls of water are deaf from their infancy, like those that dwell near the *overfals* of Nilus. *Raleigh's Hist.*

OVERFLACKE, or } an island of Holland, in
OVERFLAKEE, } the department of Delft, and late province of South Holland, is the mouth of the Meuse. *Melissand* is the capital, according to Dr Brookes; but SOMMERDYCK is the chief town, according to Cruttwell and others.

* OVER-FLOAT. *v. n.* [*over* and *float*.] To swim; to float.—

The town is fill'd with slaughter, and *o'er-floats*
With a red deluge. *Dryd.*

* OVER-FLOW. *n. s.* [*over* and *flow*.]. Inundation; more than fulness; such a quantity as runs over; exuberance.—

A kind *over-flow* of kindness. *Shak.*

—Where there are great *over-flows* in seas, the drowning of them in winter maketh the summer following more fruitful. *Bacon.*—St Paul's epistles have, with many, passed for disjointed pious discourses, full of warmth and zeal and *over-flows* of light, rather than for calm, strong, coherent reasonings all through. *Locke.*—After every *over-flow* of the Nile, there was not always a mensuration. *Arbuthnot.*—The expression may be ascribed to an *over-flow* of gratitude in the general disposition of Ulysses. *Broome.*

(1.) * *To* OVERFLOW. *v. a.* [*over* and *flow*.] pret. *over-flowed*, part. pass. *over-flowed*, or *over-flown*. 1. To fill beyond the brim.—Would'st thou not bear it cheerfully, if thou wert sure that some excellent fortune would relieve and recompense thee, so as to *over-flow* all thy hopes? *Taylor.*—

New milk that all the winter never fails,
And all the summer *over-flows* the pails. *Dryd.*

2. To deluge; to drown; to over-run; to overpower.—The Scythians, at such a time as the northern nations *overflowed* all Christendom, came down to the sea-coast. *Spenser.*—

Canius *over-flowed* th' unhappy coast. *Dryd.*

—Do not the Nile and the Niger make yearly inundations in our days, as they have formerly done? and are not the countries so *over-flow'n* still situate between the tropics? *Bentley.*—Sixteen hundred and odd years after the earth was made, it was *over-flowed* and destroyed in the deluge of water. *Burnet.*—

Thus oft by mariners are shewn
Earl Godwin's castles *over-flow'n*. *Swift.*

(2.) * *To* OVER-FLOW. *v. n.* 1. To be fuller than the brim can hold.—

While our strong walls secure us from the foe,
Ere yet with blood our ditches *over-flow*.
Dryden.

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—Had I the ſame conſciouſneſs that I ſaw Noah's flood, as that I ſaw the *overflowing* of the Thames laſt winter, I could not doubt, that I who ſaw the Thames *over-flowed*, and viewed the flood at the general deluge, was the ſame ſelf. *Locke.* 2. To exuberate; to abound.—A very ungrateful return to the author of all we enjoy, but ſuch as an *over-flowing* plenty too much inclines men to make. *Rogers.*

* OVER-FLOWING. *n. ſ.* [from *over-flow.*] Exuberance; copiouſneſs.—When men are young, they might vent the *over flowings* of their fancy that way. *Denham.*—The *overflowings* of ungodlineſs make us afraid. *Rogers.*

* OVER-FLOWINGLY. *adv.* [from *over-flowing.*] Exuberantly; in great abundance. A word not elegant nor in uſe.—His goodneſs preſſed him to impart the goods which he ſo *over-flowingly* abounds with. *Boyle.*

* *To* OVER-FLY. *v. a.* [*over* and *fly.*] To croſs by flight.—

A ſailing kite
Can ſcarce *o'er-fly* them in a day and night.
Dryd.

* OVER-FORWARDNESS. *n. ſ.* [*over* and *forwardneſs.*] Too great quickneſs; too great readineſs.—By an *over-forwardneſs* in courts to give countenance to frivolous exceptions, it often happens that cauſes are not determined according to their merits. *Hale.*

* *To* OVER-FREIGHT. *v. a.* pret. *over-freighted*; part. *over-fraught.* [*over* and *freight.*] To load too heavily; to fill with too great quantity.—A boat *over-freighted* with people, in rowing down the river, was, by the extreme weather, ſunk. *Carew.*—

Grief, that does not ſpeak,
Whiſpers the *o'er-fraught* heart, and bids it break. *Shak.*

Sorrow has ſo *o'er-fraught*
This ſinking barque, I ſhall not live to ſhew
How I abhor my firſt raſh crime. *Denham.*

* *To* OVER-GET. *v. a.* [*over* and *get.*] To paſs; to leave behind.—I *over-got* them a little before night. *Sidney.*

* *To* OVER-GLANCE. *v. a.* [*over* and *glance.*] To look haſtily over.—

I have, but with a curſory eye,
O'er-glanc'd the articles. *Shak.*

* *To* OVER-GO. *v. a.* [*over* and *go.*] 1. To ſurpaſs; to excel.—Thinking it beyond the degree of humanity to have a wit ſo far *over-going* his age. *Sidney.*—

Great Nature hath laid down at laſt,
That mighty birth wherewith ſo long ſhe went,
And *over-went* the times of ages paſt. *Daniel.*

2. To cover. Obſolete.—

All which, my thoughts ſay they ſhall never do,
But rather, that the earth ſhall *over-go*
Some one at leaſt. *Chapman.*

* *To* OVER-GORGE. *v. a.* [*over* and *gorge.*] To gorge too much.—

Art thou grown great,
And, like ambitious Sylla, *over-gorg'd?* *Shak.*

* OVER-GREAT. *adj.* [*over* and *great.*] Too great.—Though putting the mind unprepared upon an unuſual ſtreſs ought to be avoided; yet this muſt not run it, by an *over-great* ſhyneſs of difficulties, into a lazy ſauntering about obvious things. *Locke.*

(1.) * *To* OVER-GROW. *v. a.* [*over* and *grow.*] 1. To cover with growth.—

Roof and floor, and walls were all of gold,
But *over-grown* with duſt. *Spenſer.*

The woods and deſart caves,
With wild thyme and the gadding vine *o'er-grown*,
And all their echoes mourn. *Milton.*

2. To riſe above.—If the binds be very ſtrong, and much *over-grown* the poles, ſome adviſe to ſtrike off their heads with a long ſwitch. *Mort.*

(2.) * *To* OVER-GROW. *v. n.* To grow beyond the fit or natural ſize.—One part of his army, with incredible labour, cut a way through the thick and *over-grown* woods. *Knolles's Hiſt. of the Turks.*—A huge *over-grown* ox was grazing in a meadow. *L'Eſtr.*—.

Him for a happy man I own,
Whoſe fortune is not *over-grown.* *Swift.*

* OVER-GROWTH. *n. ſ.* [*over* and *growth.*] Exuberant growth.—

The *over-growth* of ſome complexion,
Oft breaking down the pales. *Shak.*

—The fortune in being the firſt in an invention, doth cauſe ſometimes a wonderful *over-growth* in riches. *Bacon.*—

Suſpected to a ſequent king, who ſeeks
To ſtop their *over-growth*, as in-mate gueſts
Too numerous. *Milton.*

(1.) * *To* OVERHALE. *v. a.* [*over* and *hale.*] 1. To ſpread over.—

Now the froſty night
Her mantle black thro' heaven gan *over-hale.*
Spenſer.

2. To examine over again: as, he *over-haled* my account.

(2.) *To* OVERHALE, in ſea language, applied to a rope, ſignifies to hale or draw it too ſtiff, or to haſe it the contrary way.

(1.) * *To* OVERHANG. *v. a.* [*over* and *hang.*] To jut over; to impend over.—

As fearfully as doth a galled rock
O'er-hang and jutty his confounded baſe. *Shak.*

Where bord'ring hazle *over-hangs* the ſtreams.
Gay.

—If you drink tea upon a promontory that *over-hangs* the ſea, it is preferable to an aſſembly. *Pope.*

(2.) * *To* OVER-HANG. *v. n.* To jut over.—

The reſt was craggy cliff, that *over-hang*
Still as it roſe, impoſſible to climb. *Milton.*

* *To* OVER-HARDEN. *v. a.* [*over* and *harden.*] To make too hard.—It was brittle, like *over-hardened* ſteel. *Boyle.*

(1.) OVER-HAULING, the act of opening and extending the ſeveral parts of a tackle, or other aſſemblage of ropes, communicating with blocks or dead eyes. It is uſed to remove thoſe blocks to a ſufficient diſtance from each other, that they may be again placed in a ſtate of action, ſo as to produce the effect required.

(2.) OVER-HAULING. See *To* OVER-HALE, § 1, 2.

* OVER-HEAD. *adv.* [*over* and *head.*] Aloft; in the zenith; above; in the cieling.—

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Over-head the moon
Sits arbitreſs, and nearer to the earth. *Milton.*
—The four ſtars *over-head*, repreſent the four children. *Addiſon.*

* *To* OVER-HEAR. *v. a.* [*over* and *hear.*] To hear thoſe who do not mean to be heard.—
I am inviſible,
And I will *over-hear* their conference. *Shak.*
—They had a full ſight of the Infanta at a maſk dancing, having *over-heard* two gentlemen who were tending towards that ſight. *Wotton.*—
That ſuch an enemy we have who ſeeks
Our ruin, both by thee inform'd I learn,
And from the parting angel *over-heard*. *Milt.*
—They were ſo loud in their diſcourſe, that a black-berry from the next hedge *over-heard* them. *L'Eſtrange.*—
The nurſe,
Though not the words, the murmurs *over-heard*. *Dryden.*
—The witneſs *over-hearing* the word pillory repeated, ſlunk away privately. *Addiſon.*

* *To* OVER-HEAT. *v. a.* [*over* and *heat.*] To heat too much.—
Over-heated by the morning chace. *Addiſon.*
—It muſt be done upon the receipt of the wound, before the patient's ſpirits be *over-heated* with pain or fever. *Wiſeman.*

* *To* OVER-HEND. *v. a.* [*over* and *hend.*] To overtake; to reach.—
As his fair leman flying through a brook,
He *over-hent*. *Spenſer.*

* OVER-JOY. *n. ſ.* Tranſport; ecſtaſy.—
The mutual conf'rence that my mind hath had,
Makes me the bolder to ſalute my king
With ruder terms; ſuch as my wit affords,
And *over-joy* of heart doth miniſter. *Shak.*

* *To* OVER-JOY. *v. a.* [*over* and *joy.*] To tranſport; to raviſh.—He that puts his confidence in God only, is neither *over-joyed* in any great good things in this life, nor ſorrowful for a little thing. *Taylor's Guide.*—The biſhop, partly aſtoniſhed, and partly *over-joyed* with theſe ſpeeches, was ſtruck into a ſad ſilence for a time. *Hayw.*—
This love-ſick virgin, *over-joy'd* to find
The boy alone; ſtill follow'd him behind. *Addiſon.*

OVERISSEL. See OVERYSSEL.

* *To* OVERLABOUR. *v. a.* [*over* and *labour.*] To take too much pains on any thing; to haraſs with toil.—
She without noiſe will over-ſee
His children and his family;
And order all things till he come,
Sweaty and *over-labour'd*, home. *Dryden.*

* *To* OVERLADE. *v. a.* [*over* and *lade.*] To over-burthen.—
Thus to throng and *over-lade* a ſoul
With love, and then to leave a room for fear,
That ſhall all that controul. *Suckling.*

OVER-LANDENBROECK, a town of Holland, in the dep. of the Amſtel, near 2 miles from Duerſtede.

* OVERLARGE. *adj.* [*over* and *large.*] Larger than enough.—Our attainments cannot be *over-large*, and yet we manage a narrow fortune very unthriftily. *Collier.*

* OVER-LASHINGLY. *adv.* [*over* and *laſh.*] With exaggeration.—A mean word, now obſolete.—Although I be far from their opinion who write too *over-laſhingly*, that the Arabian tongue is in uſe in two third parts of the inhabited world, yet I find that it extendeth where the religion of Mahomet is profeſſed. *Brerewood.*

* *To* OVER-LAY. *v. a.* [*over* and *lay.*] 1. To oppreſs by too much weight or power.—
Some *over-layeth* the commons too much. *Tuſſ.*
—That mercy which keepeth from being *over-laid* and oppreſt. *Hooker.*—When any country is *over-laid* by the multitude which live upon it, there is a natural neceſſity compelling it to diſburthen itſelf. *Raleigh.*—We envy the preſent, and reverence the paſt; thinking ourſelves inſtructed by the one, and *over-laid* by the other. *Ben Jonſon.*—Good laws had been antiquated by the courſe of time, or *over-laid* by the corruption of manners. *King Charles.*—Our ſins have *over-laid* our hopes. *K. Char* —
Palamon with odds was *over-laid*. *Dryd.*
2. To ſmother with too much or too cloſe covering.—
Like mothers, which their infants *over-lay*. *Milton.*
The new born babes by nurſes *over-laid*. *Dryden.*
3. To ſmother; to cruſh; to overwhelm.—They quickly ſtifled and *over-laid* thoſe infant principles of piety and virtue, ſown by God in their hearts. *South.*—
A heavy lump of earth without deſire,
A heap of aſhes that *o'er-lays* your fire. *Dryden.*
The ſtars, no longer *over-laid* with weight,
Exert their heads from underneath the maſs,
And upward ſhoot. *Dryden.*
The fire may be covered and *over-laid*, but cannot be entirely quenched and ſmothered. *Spectator.*—In preaching, no men ſucceed better than thoſe who truſt to the fund of their own reaſon, advanced but not *over-laid* by commerce with books. *Swift.* 4. To cloud; to over-caſt.—
Phœbus's golden face it did attaint,
As when a cloud his beams doth *over-lay*. *Spenſer.*
5. To cover ſuperficially.—The *over-laying* of their chapiters was of ſilver. *Ex.* xxxviii. 17.—
By his preſcript a ſanctuary is fram'd
Of cedar, *over-laid* with gold. *Milton.*
6. To join by ſomething laid over.—
Thou us impower'd
To fortify thus far, and *over-lay*,
With this portentous bridge, the dark abyſs. *Milton.*

* *To* OVERLEAP. *v. a.* [*over* and *leap.*] To paſs by a jump.—
A ſtep
On which I muſt fall down or elſe *o'er-leap*;
For in my way it lies. *Shak.*
Daring ſhips and men prophane
Th' eternal fences *over-leap*,
And paſs at will the boundleſs deep. *Dryden.*

* OVERLEATHER. *n. ſ.* [*over* and *leather.*] The part of the ſhoe that covers the foot.—I have ſometimes more feet than ſhoes; or ſuch ſhoes as my toes look through the *over-leather*. *Shak.*

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* OVERLIGHT. *n. f.* [*over* and *light*.] Too ſtrong light.—An *over-light* maketh the eyes dark. *Bacon.*

(1.) * *To* OVERLIVE. *v. a.* [*over* and *live*.] To live longer than another; to ſurvive; to out-live.—Muſidorus, who ſhewed a mind not to *over-live* Pyrocles, prevailed. *Sidney.*—

He concludes in hearty prayers,
That your attempts may *overlive* the hazard
And fearful meeting of their oppoſite. *Shak.*
They *over-lived* that envy. *Hayward.*

(2.) * *To* OVERLIVE. *v. n.* To live too long.—

Why do I *over-live*? *Milt.*

* OVERLIVER. *n. f.* [from *over-live*.] Survivor; that which lives longeſt.—A peace was concluded, to continue for both the kings lives, and the *over-liver* of them. *Bacon.*

* *To* OVERLOAD. *v. a.* [*over* and *load*.] To burthen with too much.—The memory of youth is charged and *over-loaded*. *Felton.*—

Men *overloaded* with a large eſtate
May ſpoil their treaſure in a nice conceit.
Young.

* OVERLONG. *adj.* [*over* and *long*.] Too long.—I have tranſgreſſed the laws of oratory, in making my periods and parentheſes *over-long*. *Boyle.*

* *To* OVERLOOK. *v. a.* [*over* and *look*.] 1. To view from a higher place.—

The pile *o'er-look'd* the town. *Dryden.*

—I will do it with the ſame reſpect to him, as if he were alive, and *over-looking* my paper while I write. *Dryden.* 2. To examine by the eye; to peruſe.—

Wou'd I had *o'erlook'd* the letter. *Shak.*

3. To ſuperintend; to overſee.—He was preſent in perſon to *over-look* the magiſtrates. *Spenſer.*—Many of the poor pariſhioners through neglect do periſh, for want of ſome needful eye to *overlook* them. *Graunt.* 4. To review.—

The time and care that are required,
To *over-look* and file, and poliſh well,
Fright poets from that neceſſary toil.
Roſcommon.

5. To paſs by indulgently.—This part of good nature which conſiſts in the pardoning and *over-looking* of faults is to be exerciſed only in doing ourſelves juſtice. *Addiſon.*—In vain do we hope that God will *over-look* ſuch high contradiction of ſinners. *Rogers.* 6. To neglect; to ſlight.—Of the two relations, Chriſt *over-looked* the meaner. *South.*—To *over-look* the entertainment before him, and languiſh for that which lies out of the way, is ſickly and ſervile. *Collier.*—The ſuffrage of our poet laureat ſhould not be *over-looked*. *Addiſon.*—Religious fear, when produced by juſt apprehenſions of a divine power, naturally *over-looks* all human greatneſs that ſtands in competition with it. *Addiſon.*—The happieſt of mankind, *over-looking* thoſe ſolid bleſſings which they already have, ſet their hearts upon ſomewhat they want. *Atterbury.* They *over-look* truth in the judgments they paſs on adverſity and proſperity. *Atterbury.*

* OVERLOOKER. *n. f.* [*over* and *look*.] The original word ſignifies an *over-looker*, or one who ſtands higher than his fellows and over-looks them. *Watts.*

* OVERLOOP. *n. f.* The ſame with *orlop*.—In extremity we carry our ordnance better than we were wont, becauſe our nether *over-loops* are raiſed commonly from the water. *Raleigh.*

* OVERMASTED. *adj.* [*over* and *maſt*.] Having too much maſt.—

Cloanthus, better mann'd, purſu'd him faſt;
But his *o'er maſted* gally check'd his haſte. *Dryd.*

* *To* OVERMASTER. *v. a.* [*over* and *maſter*.] To ſubdue; to govern.—

For your deſire to know what is between us,
O'er-maſter it as you may. *Shak. Hamlet.*
So ſleeps a pilot, whoſe poor bark is preſt
With many a mercileſs *o'er-maſt'ring* wave.
Craſhaw.

—They are *over-maſtered* with a ſcore of drunkards. *Milton on Education.*

* OVERMATCH. *n. f.* [*over* and *match*.] One of ſuperior powers; one not to be overcome.—Spain is no *over-match* for England. *Bacon.*—

Eve was his *over-match*. *Milton.*

—In a little time there will ſcare be a woman of quality in Great Britain, who would not be an *over-match* for an Iriſh prieſt. *Addiſon's Freeholder.*

* *To* OVERMATCH. *v. a.* [*over* and *match*.] To be too powerful; to conquer; to oppreſs by ſuperior force.—

I have ſeen a ſwan
With bootleſs labour ſwim againſt the tide,
And ſpend her ſtrength with *over-matching* waves. *Shak.*
Sir William Lucy, with me
Set from our *o'er-match'd* forces forth for aid.
Shak.
Aſſiſt, leſt I who erſt
Thought none my equal, now be *over-match'd*.
Paradiſe Regained.

—How great ſoever our curioſity be, our exceſs is greater, and does not only *over-match*, but ſupplant it. *Dec. of Piety.*—

He from that length of time dire omens drew,
Of Engliſh *over-match'd*. *Dryden.*
It moves our wonder, that a foreign gueſt
Should *over-match* the moſt, and match the beſt.
Dryden.

* OVER-MEASURE. *n. f.* [*over* and *meaſure*.] Something given over the due meaſure.

* *To* OVER-MIX. *v. a.* [*over* and *mix*.] To mix with too much.—

Little meaſure *over-mixt* with woe. *Creech.*

* OVERMOST. *adj.* [*over* and *moſt*.] Higheſt; over the reſt in authority. *Ainſ.*

(1.) * OVERMUCH. *adj.* [*over* and *much*.] Too much; more than enough.—It was the cuſtom of thoſe former ages, in their *over-much* gratitude, to advance the firſt authors of any uſeful diſcovery among the number of their gods. *Wilkins.*—An *over-much* uſe of ſalt, beſides that it occaſions thirſt and *over-much* drinking, has other ill effects. *Locke.*

(2.) * OVERMUCH. *adv.* In too great a degree.—They *over-much* abridge the church of her power in theſe things. *Hooker.*—

I alſo err'd, in *over-much* admiring
What ſeem'd in thee ſo perfect. *Milt. Par. Loſt.*
Deject not then ſo *over-much* thyſelf,
Who haſt of ſorrow thy full load beſides. *Milt.*

(3.) * OVERMUCH. *n. f.* More than enough.—
By attributing *over-much* to things
Leſs excellent, as thou thyſelf perceiv'ſt. *Milton.*

—Even

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—Even good men may aſcribe *over-much* to themſelves. *Grew.*

* OVERMUCHNESS. *n. ſ.* [from *over-much.*] Exuberance; ſuperabundance. A word not uſed nor elegant.—There are words that do as much raiſe a ſtyle, as others can depreſs it; ſuperlation and *over-muchneſs* amplifies. *Ben Jonſon.*

* *To* OVERNAME. *v. a.* [*over* and *name.*] To name in a ſeries.—*Over-name* them; and as thou nameſt them I will deſcribe them. *Shak.*

* OVERNIGHT. *n. ſ.* [*over* and *night.* This ſeems to be uſed by *Shakeſpeare* as a noun, but by *Addiſon* more properly, as I have before placed it, as a noun with a prepoſition.] Night before bed-time.—

If I had given you this at *over-night,*
She might have been o'erta'en. *Shakeſpeare.*

—Will confeſſes, that for half his life his head ached every morning with reading men *over-night.* *Addiſon.*

* *To* OVEROFFICE. *v. a.* [*over* and *office.*] To inſult by virtue of an office.—This might be the fate of a politician which this aſs *overoffices.* *Shak.*

* OVEROFFICIOUS. *adj.* [*over* and *officious.*] Too buſy; too importunate.—This is an *over-officious* truth, and is always at a man's heels. *Collier on Reaſon.*

* *To* OVERPASS. *v. a.* [*over* and *paſs.*] 1. To croſs.—

I ſtood on a wide river's bank,
Which I muſt needs *o'er-paſs.* *Dryden.*
What have my Scyllas and my Syrtes done,
When theſe they *over-paſs,* and thoſe they ſhun?
Dryden.

2. To overlook; to paſs with diſregard.—The complaint about pſalms and hymns might as well be *over-paſt* without any anſwer. *Hooker.*—

I read the ſatire thou entitleſt firſt,
And laid aſide the reſt, and *over-paſt,*
And ſwore, I thought the writer was accurſt,
That his firſt ſatire had not been his laſt.
Harrington.

All the beauties of the eaſt
He ſlightly view'd, and ſlightly *over-paſs'd.* *Milt.*

3. To omit in a reckoning.—Arithmetical progreſſion demonſtrates how faſt mankind would increaſe, *over-paſſing* as miraculous, though indeed natural, that example of the Iſraelites who were multiplied in 215 years, from 70 to 60,000 able men. 4. To omit; not to receive; not to compriſe.—If the grace of him which ſaveth *over-paſs* ſome, this we may leave to the hidden judgments of righteouſneſs. *Hooker.*

* OVERPAST. *part. adj.* [from *over-paſs.*] Gone; paſt.—

What can'ſt thou ſwear by now?—
—By time to come,—
That thou haſt wronged in the time *o'er-paſt.*
Shakeſpeare.

* *To* OVERPAY. *v. a.* [*over* and *pay.*] To reward beyond the price.—

Let me buy your friendly help thus far,
Which I will *over-pay,* and pay again,
When I have found it. *Shakeſpeare.*
You have yourſelf your kindneſs *over-paid;*
He ceaſes to oblige who can unbraid. *Dryden.*
Wilt thou with pleaſure hear thy lover's ſtrains,
And with one heav'nly ſmile *o'er-pay* his pains?
Prior.

* *To* OVERPEER. *v. a.* [*over* and *peer.*] To overlook; to hover above. It is now out of uſe.—

The ocean *overpeering* of his liſt,
Eats not the flats with more impetuous haſte,
Than young Laertes, in a riotous head,
O'er-bears your officers. *Shak. Hamlet.*
Your Argoſies with portly ſail,
Do *over-peer* the petty traffickers. *Shak.*
Mountainous error wou'd be too highly heapt
For truth to *over-peer.* *Shak. Coriolanus.*
Thus yields the cedar to the axe's edge,
Whoſe top branch *over-peer'd* Jove's ſpreading tree. *Shakeſp.*

—They are invincible, by reaſon of the *over-peering* mountains that back the one, and ſlender fortifications of the other to land-ward. *Sandys's Journey.*

* *To* OVERPERCH, *v. a.* [*over* and *perch.*] To fly over.—

With love's light wing did I *o'er-perch* theſe walls,
For ſtony limits cannot hold love out. *Shak.*

* OVERPLUS. *n. ſ.* [*over* and *plus.*] Surplus; what remains more than ſufficient.—Some other ſinners there are, from which that *overplus* of ſtrength in perſuaſion doth ariſe. *Hooker.*—A great deal too much of it was made, and the *overplus* remained ſtill in the mortar. *L'Eſtrange.*—This gentleman gives away all which is the *overplus* of a great fortune. *Addiſon.*

* *To* OVERPLY. *v. a.* [*over* and *ply.*] To employ too laboriouſly.—

What ſupports me, doſt thou aſk?
The conſcience, friend, t' have loſt them *over-ply'd,*
In liberty's defence. *Milton.*

* OVERPOISE. *n. ſ.* [from the verb.] Preponderant weight.—Horace, in his firſt and ſecond book of odes, was ſtill riſing, but came not to his meridian till the third; after which his judgment was an *over-poiſe* to his imagination. *Dryden.*

Some *over-poiſe* of ſway, by turns they ſhare.
In peace the people, and the prince in war.
Dryden.

* *To* OVERPOISE. *v. a.* [*over* and *poiſe.*] To outweigh.—Whether cripples who have loſt their thighs will float, their lungs being able to waft up their bodies, which are in others *overpoiſed* by the hinder legs; we have not made experiment. *Brown.*—

The ſcale
O'er-pois'd by darkneſs, lets the night prevail.
Creech.

* *To* OVERPOWER. *v. a.* [*over* and *power.*] To be predominant over; to oppreſs by ſuperiority.—

Now in danger try'd, now known in arms,
Not to be *over-power'd.* *Milton.*

—Much light *over-powers* the eye. *Boyle.*—Reaſon allows none to be confident, but him only who governs the world, who knows all things, and can do all things; and can neither be ſurpriſed nor *over-powered.* *South.*—After the death of Craſſus, Pompey found himſelf out-witted by Cæſar; he broke with him, *over-powered* him in the ſenate, and cauſed many unjuſt decrees to paſs againſt him. *Dryden.*—The hiſtorians make theſe mountains

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tains the ſtandards of the riſe of the water; which they could never have been, had they not been ſtanding when it did ſo riſe and *over-power* the earth. *Woodward.*—Inſpiration is, when ſuch an *over-powering* impreſſion of any propoſition is made upon the mind by God himſelf, that gives a convincing and indubitable evidence of the truth and divinity of it. *Watts.*

* *To* OVERPRESS. *v. a.* [*over* and *preſs.*] To bear upon with irreſiſtible force; to overwhelm; to cruſh.—Having an excellent horſe under him, when he was *over-preſſed* by ſome, he avoided them. *Sidney.*—

Michael's arm main promontories flung,
And *over-preſs'd* whole legions weak with ſin.
Roſcommon.

—When a prince enters on a war, he ought naturally to conſider whether his coffers be full, his people rich by a long peace and free trade, not *over-preſſed* with many burthenſome taxes. *Swift.*

* *To* OVER-PRIZE. *v. a.* [*over* and *prize.*] To value at two high a price.—Parents *over-prize* their children, while they behold them through the vapours of affection. *Wotton.*

To OVER-RAKE. *v. a.* among ſeamen: When a ſhip riding at anchor ſo overbeats herſelf into an high ſea, that ſhe is waſhed by the waves breaking in upon her, they ſay the waves *over-rake* her.

* OVER-RANK. *adj.* [*over* and *rank.*] Too rank.—It produces *over-rank* binds. *Mortimer.*

* *To* OVER-RATE. *v. a.* [*over* and *rate.*] To rate at too much.—

Vain ſhows and ſcenes you *over-rate. Dryd.*

—To avoid the temptations of poverty, it concerns us not to *over-rate* the conveniences of our ſtation. *Rogers.*

OVER-REACH. *n. ſ.* See FARRIERY, *Part* V. *Sect.* IV. § II.

(1.) * *To* OVER-REACH. *v. a.* [*over* and *reach.*] 1. To raiſe above.—The mountains of Olympus, Athos and Atlas, *over-reach* and ſurmount all winds and clouds. *Raleigh.*—The floods *over-reached* the tops of the higheſt mountains. *Burnet.* 2. To deceive; to go beyond; to circumvent. A ſagacious man is ſaid to have a long *reach.*—What more cruel than man, if he ſee himſelf able by fraud to *over-reach* the laws? *Hooker.*—I have laid my brain in the ſun and dried it, that it wants matter to prevent ſo groſs *over-reaching. Shak.*—

Shame to be overcome, or *over-reach'd,*
Would utmoſt vigour raiſe, and rais'd unite.
Milton.

A man, who had been matchleſs held
In cunning, *over-reach'd* where leaſt he thought.
Milton.

—There is no pleaſanter encounter than a trial of ſkill betwixt ſharpers to *over-reach* one another. *L'Eſtrange.*—Forbidding oppreſſion, defrauding, and *over-reaching* one another. *Tillotſon.*—We may no more ſue for them than we can tell a lie, or ſwear an unlawful oath, or *over-reach* in their cauſe. *Kettlewortb.*—Such a principal is ambition, or a deſire of fame, by which many vicious men are *over-reached*, and engaged contrary to their natural inclinations in a glorious and laudable courſe of action. *Spectator.*—Let him come up, quoth he; it is but ſticking to my point, and he can never *over-reach* me. *Hiſtory of John Bull.*

(2.) * *To* OVER-REACH, *v. n.* A horſe is ſaid to *over-reach*, when he brings his hinder feet too far forwards, and ſtrikes his toes againſt his fore ſhoes. *Farrier.*

* OVER-REACHER. *n. ſ.* [from *over-reach.*] A cheat; a deceiver.

* *To* OVER-READ. *v. a.* [*over* and *read.*] To peruſe.—The contents of this is the return of the duke; you ſhall anon *over-read* it at your pleaſure. *Shak.*

* *To* OVER-RED. *v. a.* [*over* and *red*] To ſmear with red.—

Prick thy face, and *over-red* thy fear,
Thou lily-liver'd boy. *Shak.*

* *To* OVER-RIPEN. *v. a.* [*over* and *ripen.*] To make too ripe.—

Why droops my lord like *over-ripen'd* corn?
Shak.

* *To* OVER-ROAST. *v. a.* [*over* and *roaſt.*] To roaſt too much.—

'Twas burnt and dried away,
And better 'twere, that both of us did faſt,
Than feed it with ſuch *over-roaſted* fleſh. *Shak.*

* *To* OVER-RULE. *v. a.* [*over* and *rule.*] 1. To influence with predominant power; to be ſuperior in authority.—Which humour perceiving to *over-rule* me, I ſtrave againſt it. *Sidney.*—That which the church ſhall think and deſire to be true or good, muſt in congruity of reaſon *over-rule* all other inferior arguments whatſoever. *Hooker.*—Except our own private reſolutions be by the law of public determinations *over-ruled*, we take away all poſſibility of ſociable life in the world.—*Hooker.*—What if they be ſuch as will be *over-ruled* with ſome one, whom they dared not diſpleaſe? *Whitgifte.*—His paſſion and animoſity *over-ruled* his conſcience. *Clarendon.*—A wiſe man ſhall *over-rule* his ſtars. *Taylor.*—He is acted by a paſſion which abſolutely *over-rules* him. *South.*—'Tis temerity for men to venture their lives upon unequal encounters; unleſs where they are obliged by an *over-ruling* impulſe of conſcience and duty. *L'Eſtrange.*—A man may, by the influence of an *over-ruling* planet, be inclined to luſt, and yet by force of reaſon overcome that bad influence. *Swift.* 2. To govern with high authority; to ſuperintend.—Wherefore does he not now come forth and openly *over-rule*, as in other matters he is accuſtomed. *Hayward.* 3. To ſuperſede: as in law to *over-rule* a plea, is to reject it as incompetent.—Thirty acres make a farthing land, nine farthings a Corniſh acre, and four Corniſh acres a knight's fee. But this rule is *over-ruled* to a greater or leſſer quantity, according to the fruitfulneſs or barrenneſs of the ſoil. *Carew.*

(1.) * *To* OVER-RUN. *v. a.* [*over* and *run.*] 1. To haraſs by incurſions; to ravage; to rove over in a hoſtile manner.—Thoſe barbarous nations that *over-ran* the world, poſſeſſed thoſe dominions. *Spenſer.*

The tears ſhe ſhed,
Like envious floods *o'er-ran* her lovely face.
Shak.

They err, who count it glorious to ſubdue
By conqueſt far and wide, to *over-run*
Large countries. *Milton.*

The nine
Their fainting foes to ſhameful flight compell'd,
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And with reſiſtleſs force *o'er-run* the field. *Dryd.* —Guſtavus Adolphus could not enter this part of the empire, after having *over-run* moſt of the reſt. *Addiſon.*—A commonwealth may be *over-run* by a powerful neighbour. *Swift.* 2. To out run; to paſs behind.—Pyrocles being come to ſixteen, *over-run* his age in growth, ſtrength, and all things following it. *Sidney.*—

We may out-run,
By violent ſwiftneſs, that which we run at,
And loſe by *over-running*. *Shak.*

—Ahimaaz run by the way of the plain, and *over-ran* Cuſhi. 2 *Sam.* xviii. 23.—The earth *over-runneth* the water. *Bacon.* 3. To overſpread; to cover all over.—With an *over-running* flood he will make an utter end of the place. *Nah.* i. 8.—A general flood of waters would neceſſarily *over-run* the whole earth. *Burnet.*—

And now the lovely face but half appears,
O'er-run with wrinkles and deform'd with tears.
Addiſon.

4. To do miſchief by great numbers; to peſter.—To flatter fooliſh men into a hope of life where there is none, is much the ſame with betraying people into an opinion, that they are in a virtuous and happy ſtate, when they are *over-run* with paſſion, and drowned in their luſts. *L'Eſtrange.*—Were it not for the inceſſant labours of this induſtrious animal, Egypt would be *over-run* with crocodiles. *Addiſ.* —Such proviſion made, that a country ſhould not want ſuch ſprings as were convenient for it, nor be *over-run* with them. *Woodward.* 5. To injure by treading down. 6. Among printers, to be obliged to change the diſpoſition of the lines and words in correcting, by reaſon of the inſertions.

(2.) * *To* OVER-RUN. *v. n.* To overflow; to be more than full.—

Though you have left me,
Yet ſtill my ſoul *o'er-runs* with fondneſs tow'rds you. *Smith.*

—Cattle in incloſures ſhall always have freſh paſture, that now is all trampled and *over-run*. *Spenſ.*

* *To* OVERSEE. *v. a.* [*over* and *ſee.*] 1. To ſuperintend; to overlook.—

He had charge my diſcipline to frame,
And tutor's nouriture to *overſee*. *Spenſer.*
She without noiſe will *overſee*
His children and his family. *Dryden.*

2. To overlook; to paſs by unheeded; to omit.—

I reſolve to *overſee*
No lucky opportunity. *Hudibras.*

* OVERSEEN. *part.* [from *overſee.*] Miſtaken; deceived.—It may clearly appear how it hath come to paſs, that ſo many have been *overſeen*. *Hooker.*—Such overſeers, as the overſeers of this building, would be ſo *overſeen*, as to make that which is narrower contain that which is larger. *Holyday.*—They rather obſerved what he had done, and ſuffered for the king and for his country, without further enquiring what he had omitted to do, or been *overſeen* in doing. *Clarendon.*

* OVERSEER. *n. ſ.* [from *overſee.*] 1. One who overlooks; a ſuperintendant.—There are in the world certain voluntary *overſeers* of all books, whoſe cenſure would fall ſharp on us. *Hooker.*—Jeduel and Azariah were *overſeers* unto Coniah. *Chron.*—

To entertain a gueſt, with what a care
Wou'd he his houſhold ornaments prepare;
Haraſs his ſervants, and as *o'erſeer* ſtand,
To keep them working. *Dryden.*

2. An officer who has the care of the parochial proviſion for the poor.—The church-wardens and *overſeers* of the poor might find it poſſible to diſcharge their duties. *Graunt.*

(1.) * *To* OVERSET. *v. a.* [*over* and *ſet.*] 1. To turn bottom upwards; to throw off the baſis; to ſubvert.—

The tempeſts met,
The ſailor's maſter'd, and the ſhip *o'erſet*. *Dryd.*

—It puts the ſea into horrible perturbation, even when there is not the leaſt breath of wind; *overſetting* ſhips in the harbours, and ſinking them. *Woodward.*—We might bear them down with the weight of our armies, and *over-ſet* the whole power of France. *Addiſon.* 2. To throw out of regularity.—His action againſt Catiline ruined the conſul, when it ſaved the city; for it ſo ſwelled his ſoul, that ever afterwards it was apt to be *over-ſet* with vanity. *Dryden.*

(2.) * *To* OVERSET. *v. n.* To fall off the baſis; to turn upſide down.—Part of the weight will be under the axle-tree, which will ſo far counterpoiſe what is above it, that it will very much prevent the *over-ſetting*. *Mortimer.*

* *To* OVERSHADE. *v. a.* [*over* and *ſhade.*] To cover with any thing that cauſes darkneſs.—

Dark cloudy death *o'er-ſhades* his beams of life,
And he nor ſees nor hears us. *Shak.*

—No great and mighty ſubject might eclipſe or *over ſhade* the imperial power. *Bacon.*—

If a wood of leaves *o'er-ſhade* the tree,
In vain the hind ſhall vex the threſhing-floor.
Dryden.

Should we mix our friendly talk,
O'er-ſhaded in that fav'rite walk. *Prior.*

* *To* OVERSHADOW. *v. a.* [*over* and *ſhadow.*] 1. To throw a ſhadow over any thing.—Weeds choak and *over-ſhadow* the corn. *Bacon.*—

Death,
Let the damps of thy dull breath
Over-ſhadow even the ſhade. *Craſhaw.*

Darkneſs muſt *over-ſhadow* all his bounds. *Milton.*

2. To ſhelter; to protect; to cover with ſuperior influence.—

My *over-ſhadowing* ſpirit and might, with thee
I ſend along: ride forth. *Milton.*
On her ſhould come
The holy ghoſt, and the power of the higheſt
O'er-ſhadow her. *Milton.*

(1.) * *To* OVERSHOOT. *v. a.* [*over* and *ſhoot.*] 1. To ſhoo beyond the mark.—Every inordinate appetite defeats its own ſatisfaction, by *over-ſhooting* the mark it aims at. *Tillotſon.* 2. To paſs ſwiftly over.—

High-rais'd on fortune's hill, new apples he ſpies.
O'er-ſhoots the valley which beneath him lies.
Harte.

3. [With the reciprocal pronoun.] To venture too far; to aſſert too much.—Leave it to themſelves to conſider, whether they have in this point or not *overſhot themſelves*. *Hooker.*—In finding fault with the laws I doubt not, you ſhall much *overſhoot yourſelf*. *Spenſer.*—For any thing that I can learn of them

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them, you have *over-ſhot yourſelf* in reckoning. *Whitgifte.*

(2.) * *To* OVERSHOOT. *v. n.* To fly beyond the mark.—Often it drops, or *over-ſhoots* by the diſproportions of diſtance or application. *Collier.*

* OVERSIGHT. *n. ſ.* [from *over* and *ſight.*] 1. Superintendance.—They gave the money, being told unto them, that had the *over-ſight* of the houſe. 2 *Kings*, xii. 11.—Feed the flock of God, taking the *over-ſight* thereof, not by conſtraint, but willingly. 1. *Pet.* v. 2. 2. Miſtake; error.—Amongſt ſo many huge volumes, as the infinite pains of St. Auguſtine have brought forth, what one hath gotten greater commendation, than the book wherein he carefully owns his *over-ſights*? *Hooker.*—They watch their opportunity to take advantage of their adverſaries *over-ſight. Kettlewell.*

Not ſo his ſon; he mark'd this *over-ſight.*
Pope.

* *To* OVERSIZE. *v. a.* [*over* and *ſize.*] 1. To ſurpaſs in bulk.—Thoſe bred in a mountainous country *over-ſize* thoſe that dwell on low levels. *Sandys.* 2. [*Over* and *ſize*, a compoſt with which maſons cover walls.] To plaſter over.—

He, thus *o'er-ſized* with coag'late gore,
Old grandſire Priam ſeeks. *Shak.*

* *To* OVERSKIP. *v. a.* [*over* and *ſkip.*] 1. To paſs by leaping.—Neither ſeek ye to *over-ſkip* the fold, which they about you have pitched. *Hooker.* 2. To paſs over.—

Mark if to get them ſhe *o'er-ſkip* the reſt. *Donne.*

3. To eſcape.—

When that hour *o'er-ſkips* me in the day,
Wherein I ſigh not, Julia, for thy ſake;
The next enſuing hour ſome foul miſchance
Torment me. *Shak.*

The mind much ſuff'rance does *o'er ſkip*,
When grief hath mates. *Shak.*

* *To* OVERSLEEP. *v. a.* [*over* and *ſleep.*] To ſleep too long.

* *To* OVERSLIP. *v. a.* [*over* and *ſlip.*] To paſs undone, unnoticed, or unuſed; to neglect.—The careleſſneſs of the juſtices in impoſing this rate, or the backwardneſs of the inhabitants in paying the ſame, *over ſlipped* the time. *Carew.*—He that hath *over-ſlipt* ſuch opportunities, is to bewail and retrieve them betimes. *Hammond.*—It were injurious to *over-ſlip* a noble act in the duke during this employment. *Wotton.*

OVERSMAN, *n. ſ.* in Scots law, a perſon appointed by arbiters, or by the parties ſubmitters, to determine the matter ſubmitted, in caſe the parties diſagree in their opinion.

* *To* OVERSNOW. *v. a.* [*over* and *ſnow.*] To cover with ſnow.—

Theſe I wielded while my bloom was warm,
Ere age unſtrung my nerves, or time *o'er-ſnow'd* my head. *Dryden's Æneis.*

* OVERSOLD. *part.* [from *overſel.*] Sold at too high a price.—

Life with eaſe I can diſclaim,
And think it *over-ſold* to purchaſe fame. *Dryd.*

* OVERSOON. *adv.* [*over* and *ſoon.*] Too ſoon.—The lad may prove well enough, if he *over-ſoon* think not too well of himſelf. *Sidney.*

* OVERSPENT. *part.* [*over* and *ſpent.*] Wearied; haraſſed; foreſpent. The verb *overſpend* is not uſed.—

Thoſtylis, wild thyme, and garlick beats,
For harveſt hinds, *o'erſpent* with toil and heats.
Dryden.

* *To* OVERSPREAD. *v. a.* [*over* and *ſpread.*] To cover over; to fill; to ſcatter over.—Whether they were Spaniards, Gauls, Africans, Gothes, or ſome other which did *overſpread* all Chriſtendom, it is impoſſible to affirm. *Spenſer.*—Of the three ſons of Noah was the whole earth *overſpread. Gen.* ix. 19.—

Darkneſs Europe's face did *overſpread*
From lazy cells, where ſuperſtition bred. *Denh.*

—Not a deluge that only over-run ſome particular region; but that *overſpread* the face of the whole earth, from pole to pole, and from eaſt to weſt. *Burnet.*

* *To* OVERSTAND. *v. a.* [*over* and *ſtand.*] To ſtand too much upon conditions.—

What madman would *o'erſtand* his market twice? *Dryden.*

* *To* OVERSTARE. *v. a.* [*over* and *ſtare.*] To ſtare widely.—Some warlike ſign muſt be uſed; either a ſlovenly buſkin, or an *overſtaring* frounced head. *Aſcham.*

* *To* OVERSTOCK. *v. a.* [*over* and *ſtock.*] To fill too full; to crowd.—Had the world been eternal, it muſt long ere this have been *overſtocked*, and become too narrow for the inhabitants. *Wilkins.*—If raillery had entered the old Roman coins, we ſhould have been *overſtocked* with medals of this nature. *Addiſon.*—Some biſhop, not *overſtocked* with relations, or attached to favourites, beſtows ſome inconſiderable benefice. *Swift.*—It may be worth enquiring what we ſhall do with our wool, in caſe Barnſtaple ſhould be ever *overſtocked. Swift.*

* *To* OVERSTORE: [*v. a. over* and *ſtore.*] To ſtore with too much.—Fiſhes are more numerous than beaſts or birds, as appears by their numerous ſpawn; and if all theſe ſhould come to maturity, even the ocean itſelf would have been long ſince *overſtored* with fiſh. *Hale's Origin.*

(1.) * *To* OVERSTRAIN. *v. a.* [*over* and *ſtrain.*] To ſtretch too far.—Confeſſors were apt to *overſtrain* their privileges. *Ayliffe.*

(2.) * *To* OVERSTRAIN. *v. n.* To make too violent efforts.—Craſſus loſt himſelf, his equipage, and his army, by *overſtraining* for the Parthian gold. *Collier.*—He wiſhed all painters would imprint this leſſon deeply in their memory, that with *overſtraining* and earneſtneſs of finiſhing their pieces, they often did them more harm than good. *Dryden's Dufreſnoy.*

* *To* OVERSWAY. *v. a.* [*over* and *ſway.*] To over-rule; to bear down.—There voices being more in number, muſt *overſway* their judgments who are fewer. *Hooker.*

Great command *o'erſways* our order. *Shak.*

—Some great and powerful nations *over-ſway* the reſt. *Heylyn.*

* *To* OVERSWELL. *v. a.* [*over* and *ſwell.*] To riſe above.—

Fill, Lucius, till the wine *o'erſwell* the cup.
Shak.

When his banks the prince of rivers, Po,
Doth *overſwell*, he breaks with hideous fall.
Fairfax.

(1.) * OVERT. *adj.* [*ouvert*, Fr.] Open; publick; apparent.—

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To vouch this, is no proof,
Without more certain and more *overt* teſt. *Shak.*
—*Overt* and apparent virtues bring forth praiſe. *Bacon.*—My repulſe at Hull, was the firſt *overt* eſſay to be made, how patiently I could bear the loſs of my kingdoms. *K. Charles.*—When all was ripe, their enemies proceeded to ſo many *overt* acts in the face of the nation, that it was obvious to the meaneſt. *Swift.*—Whereas human laws can reach no farther than to reſtrain the *overt* action, religion extends to the ſecret motions of the ſoul. *Rogers.*

(2.) OVERT ACT, an act which, in law, muſt be clearly proved; and ſuch is to be alleged in every indictment for high treaſon.

* OVERTAKE. *v. a.* [*over* and *take.*] 1. To catch any thing by purſuit; to come up to ſomething going before.—We durſt not continue longer ſo near her confines, leſt her plagues might ſuddenly *overtake* us. *Hooker.*—

If I had given you this at over-night,
She might have been *o'ertaken.* *Shak.*
I ſhall ſee
The winged vengeance *overtake* ſuch children.
Shak.

—I will purſue, I will *overtake*, I will divide the ſpoil. *Exod.* xv. 9.—

My ſoul, more earneſtly releas'd,
Will out-ſtrip her's, as bullets flown before
A later bullet may *o'ertake.* *Donne.*
To thy wiſhes move a ſpeedy pace,
Or death will ſoon *o'ertake* thee in the chace.
Dryden.

—How muſt he tremble for fear vengeance ſhould *overtake* him? *Rogers.* 2. To take by ſurprize.—If a man be *overtaken* in a fault, ye which are ſpiritual reſtore ſuch an one in the ſpirit of meekneſs. *Gal.* vi. 1.—If it fall out, that through infirmity we be *overtaken* by any temptation, we muſt labour to riſe again. *Perkins.*

* *To* OVERTASK. *v a.* [*over* and *taſk.*] To burthen with too heavy duties or injunctions.—That office is performed by the parts with difficulty, becauſe they were *overtaſked. Harvey on Conſump.*

* *To* OVERTAX. *v. a.* [*over* and *tax.*] To tax too heavily.

* OVERTHROW. *n. ſ.* [from the verb.] 1. The ſtate of being turned upſide down. 2. Ruin; deſtruction.—Of thoſe chriſtian oratories, the *overthrow* and ruin is deſired, not by infidels, pagans, or Turks, but by a ſpecial refined ſect of Chriſtian believers. *Hooker.*—They return again into Florida, to the murther and *overthrow* of their own countrymen. *Abbot.*—

I ſerve my mortal foe,
The man who caus'd my country's *overthrow.*
Dryden.

3. Defeat; diſcomfiture.—

Both theſe conſpir'd poor reaſon's *overthrow.*
Sidney.
Quiet ſoul, depart;
For I have ſeen our enemies *overthrow.* *Shak.*

—From theſe, divers Scots feared more harm by victory than they found among their enemies by their *overthrow. Hayward.*—

Poor Hannibal is maul'd,
The theme is giv'n, and ſtrait the council's call'd,
Whether he ſhould to Rome directly go,
To reap the fruit of the dire *overthrow? Dryd.*

4. Degradation.—

His *overthrow* heaped happineſs upon him.
Shak.

* *To* OVERTHROW. *v. a.* [*over* and *throw*; pret. *overthrew*; part. *overthrown.*] 1. To turn upſide down.—Pittacus was a wiſe and valiant man, but his wife *overthrew* the table when he had invited his friends. *Taylor.* 2. To throw down.—

The *overthrown* he raiſ'd. *Milton.*

3. To ruin; to demoliſh.—

When the walls of Thebes he *overthrew,*
His fatal hand my royal father ſlew. *Dryden.*

4. To defeat; to conquer; to vanquiſh.—Our endeavour is not ſo much to *overthrow* them with whom we contend, as to yield them reaſonable cauſes. *Hooker.*—

To Sujah next, your conquering army drew,
Him they ſurpris'd, and eaſily *o'erthrew. Dryd.*

5. To deſtroy; to ſubvert; to miſchief; to bring to nothing.—She found means to have us accuſed to the king, as though we went about ſome practice to *overthrow* him in his own eſtate. *Sidney.*—

Here's Glo'ſter
O'er-charging your free purſes with large fines,
That ſeeks to *overthrow* religion. *Shak. Hen.* VI.

—Thou walkeſt in peril of thy *overthrowing. Eccluſ.* xiii. 13.—God *overthroweth* the wicked for their wickedneſs. *Prov.*—

Satan fell, whom folly *overthrew.* *Milton.*

* OVERTHROWER. *n. ſ.* [from *overthrow.*] He who overthrows.

(1.) * OVERTHWART. *adj.* [*over* and *thwart.*] 1. Oppoſite; being over againſt.—We whiſper, for fear our *overthwart* neighbours ſhould hear us, and betray us to the government. *Dryd.* 2. Croſſing any thing perpendicularly. 3. Perverſe; adverſe; contradictious; croſs.—That *overthwart* humour was diſcovered to rule in the breaſts of many. *Clarendon.*

(2.) * OVERTHWART. *prep.* Acroſs; as *he laid a plank* overthwart *the brook.* This is the original uſe.

* OVERTHWARTEDLY. *adv.* [from *overthwart.*] 1. Acroſs; tranſverſely.—The brawn of the thigh ſhall appear, by drawing ſmall hair ſtrokes from the hip to the knee, ſhadowed again *overthwart. Peacham on Drawing.* 2. Pervicaciouſly; perverſely.

* OVERTHWARTNESS. *n. ſ.* [from *overthwart.*] 1. Poſture acroſs. 2. Pervicacity; perverſeneſs.

* OVERTLY. *adv.* [from the adjective.] Openly,

(1.) OVERTON, a town of Hampſhire, anciently a borough and market town. It has conſiderable ſilk and paper mills; and lies 10 miles E. of Andover, and 54 W. of London.

(2.) OVERTON, a town of Rutlandſhire, 3 miles from Okeham; with a market on Tueſday, and fairs May 6, and Oct. 18, eſtabliſhed under Edward II.

(3–18.) OVERTON is alſo the name of 16 ſmall towns and villages; viz. of two each in Cheſhire and Glouceſterſhire; of one each in Flint, Hants, Lancaſter, Northampton, Oxford, Salop, Stafford, Worceſter, and York ſhires; and of three in Wilts.

* OVERTOOK. *pret.* and *part. paſſ.* of *overtake.*

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* *To* OVERTOP *v. a.* [*over* and *top.*] 1. To rise above; to raise the head above.—

Pile your duſt upon the quick and dead,
T' *o'ertop* old Pelion. *Shak.*

In the dance the graceful godeſs leads
The quire of nymphs, and *overtops* their heads. *Dryden.*

2. To excel; to ſurpaſs.—

Of diſpoſition gentle, and of wiſdom
O'ertopping woman's power. *Shak.*

—As far as the ſoul *o'ertops* the body, ſo far its pains, or rather mournful ſenſations, exceed thoſe of the carcaſe. *Harvey.* 3. To obſcure; to make of leſs importance by ſuperior excellence.—Whereas he had been heretofore an arbiter of Europe, he ſhould now grow leſs, and be *over-topped* by ſo great a conjunction. *Bacon's Henry* VII.—

One whom you love,
Had champion kill'd, or trophy won,
Rather than thus be *overtopt*,
Wou'd you not wiſh his laurel's cropt? *Swift.*

* *To* OVERTRIP. *v. a.* [*over* and *trip.*] To trip over; to walk lightly over.—

In ſuch a night,
Did Thiſbe fearfully *o'ertrip* the dew,
And ſaw the lion's ſhadow ere himſelf,
And ran diſmay'd away. *Shak.*

(1.) * OVERTURE. *n. ſ.* [*ouverture*, Fr.] 1. Opening; diſcloſure; diſcovery.—

I wiſh
You had only in your ſilent judgment try'd it,
Without more *overture*. *Shak.*

2. Propoſal; ſomething offered to conſideration.—MacMurugh moved Henry to invade Ireland, and made an *overture* unto him for obtaining of the ſovereign lordſhip thereof. *Davies on Ireland.*—All theſe fair *overtures*, made by men well eſteemed for honeſt dealing, could not take place. *Hayward.*—

We with open breaſt
Stand ready to receive them, if they like
Our *overture*, and turn not back. *Milton.*

—Withſtand the *overtures* of ill. *Fell.*—The earl of Pembroke, who abhorred the war, promoted all *overtures* towards accommodation. *Clarendon.*—If a convenient ſupply offers itſelf to be ſeiſed by force or gained by fraud, human nature perſuades us to hearken to the inviting *overture*. *Rogers.*—Suppoſe 500 men propoſing, debating, and voting according to their own little or much reaſon, abundance of indigeſted and abortive, many pernicious and fooliſh *overtures* would ariſe. *Swift.*

(2.) *An* OVERTURE, or OUVERTURE, is a prelude to the ſolemnities at the beginning of a public act or ceremony; an opera, tragedy, comedy, concert of muſic, &c.—The overture of the theatre or ſcene, is a piece of muſic uſually ending with a fugue: the overture of a jubilee is a general proceſſion, &c.

* *To* OVERTURN. *v. a.* [*over* and *turn.*] 1. To throw down; to topple down; to ſubvert; to ruin.—He removeth the mountains, and *overturneth* them in his anger. *Job.*—Theſe will ſometimes *overturn*, and ſometimes ſwallow up towns. *Burnet.*—This he obviates, by ſaying we ſee all the ideas in God; which is an anſwer to this objection, but ſuch an one as *overturns* his whole hypotheſis. *Locke.*—But he comes round about again, and *overturns* every ſtone that he had laid. *Leſley.*—If we will not encourage publick works of beneficence, till we are ſecure that no ſtorm ſhall *overturn* what we help to build; there is no room left for charity. *Atterbury.*—

A monument of deathleſs fame,
A woman's hand *o'erturns*. *Rowe.*

2. To overpower; to conquer.—

Pain exceſſive *overturns* all patience. *Milton.*

* OVERTURNER. *n. ſ.* [from *overturn.*] Subverter.—I have brought before you a robber of the publick treaſure, an *overturner* of law and juſtice. *Swift.*

* *To* OVERVALUE. *v. a.* [*over* and *value.*] To rate at too high a price.—We have juſt cauſe to ſtand in ſome fear, leſt by thus *overvaluing* their ſermons they make the price and eſtimation of ſcripture to fall. *Hooker.*—To *overvalue* human power is likewiſe an argument of human weakneſs. *Holyday.*

* *To* OVERVEIL. *v. a.* [*over* and *veil.*] To cover.

The day begins to break, and night is fled;
Whoſe pitchy mantle *overveil'd* the earth *Shak.*

* *To* OVERVOTE. *v. a.* [*over* and *vote.*] To conquer by plurality of votes.—The lords and commons might be content to be *overvoted* by the major part of both houſes *King Charles.*

* *To* OVERWATCH. *v. n.* [*over* and *watch.*] To ſubdue with long want of reſt.—

The lazy monarch *overwatch'd*,
Down from his propping elbow drops his head,
Diſſolv'd in ſleep. *Dryden.*

* OVERWATCHED. *adj.* Tired with too much watching.—While the dog hunted in the river, he had withdrawn himſelf to pacify with ſleep his *over watched* eyes. *Sidney.*

* OVERWEAK. *adj.* [*over* and *weak.*] Too weak; too feeble.—Paternal perſuaſions, after mankind began to forget the original giver of life, became in all *overweak* to reſiſt the firſt inclination of evil. *Raleigh's Hiſtory.*

* *To* OVERWEARY. *v. a.* [*over* and *weary.*] To ſubdue with fatigue.—Might not Palinurus fall aſleep and drop into the ſea, having been *overwearied* with watching. *Dryden.*

* *To* OVERWEATHER. *v. a.* [*over* and *weather.*] To batter by violence of weather.—

How like the prodigal doth ſhe return,
With *over-weather'd* ribs and ragged ſails,
Lean, rent, and beggar'd by the ſtrumpet wind! *Shak.*

* *To* OVERWEEN. *v. n.* [*over* and *ween.*] To think too highly; to think with arrogance.—To reach beyond the truth of any thing in thought; eſpecially in the opinion of a man's ſelf. *Hanmer.*

Oft have I ſeen a hot *o'erweening* cur,
Run back and bite, becauſe he was with-held. *Shak.*

—My maſter hath ſent for me, to whoſe feeling ſorrows I might be ſome allay, or I *o'erween* to think ſo. *Shak.*—

Laſh hence theſe *overweening* rags of France,
Theſe famiſh'd beggars. *Shak.*

My eyes too quick, my heart *o'erweens* too much. *Shak.*

Take heed of *overweening*, and compare
Thy peacock's feet with thy gay peacock's train. *Davies.*

They

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They that *overween*,
And at thy growing virtues fret their ſpleen,
No anger find in thee. *Milton.*

Satan might have learnt
Leſs *overweening*, ſince he fail'd in Job. *Milton.*

—No man is ſo bold, raſh, and *overweening* of his own works, as an ill painter and a bad poet. *Dryd.*

—Enthuſiaſm, though founded neither on reaſon nor revelation, but riſing from the conceits of a warmed or *overweening* brain, works more powerfully on the perſuaſions and actions of men, than either or both together. *Locke.*—Men of fair minds and not given up to the *overweening* of ſelf-flattery, are frequently guilty of it. *Locke.*—

Now enters *overweening* pride,
And ſcandal ever gaping wide. *Swift.*

* OVERWEENINGLY. *adj.* [from *overween.*] With too much arrogance; with too high an opinion.

* *To* OVERWEIGH. *v. a.* [*over* and *weigh.*] To preponderate.—Sharp and ſubtile diſcourſes of wit, procure many times very great applauſe, but being laid in the balance with that which the habit of ſound experience delivereth, they are *overweighed.* *Hooker.*—

My unſoil'd name, th' auſtereneſs of my life,
Will ſo your accuſation *overweigh*,
That you ſhall ſtifle in your own report. *Shak.*

* OVERWEIGHT. *n. ſ. over* and *weight.*] Preponderance.—Sinking into water is but an *overweight* of the body, in reſpect of the water. *Bacon.*

* *To* OVERWHELM. *v. a.* [*over* and *whelm.*] 1. To cruſh underneath ſomething violent and weighty.—

What age is this, where honeſt men,
Plac'd at the helm,
A ſea of ſome foul mouth or pen
Shall *overwhelm?* *Ben Jonſon.*

Back do I toſs theſe treaſons to thy head,
With the hell-hated lie *o'erwhelm* thy heart.
Shak.

—How trifling an apprehenſion is the ſhame of being laughed at by fools, when compared with that everlaſting ſhame and aſtoniſhment which ſhall *overwhelm* the ſinner, when he ſhall appear before the tribunal of Chriſt. *Rogers.*—

One hour *o'erwhelms* them all. *Pope.*

2. To overlook gloomily.—

Let the brow *o'erwhelm* it,
As fearfully as doth a galled rock
O'erhang and jutty his confounded baſe. *Shak.*

An apothecary late I noted,
In tatter'd weeds with *overwhelming* brows,
Culling of ſimples. *Shak. Romeo and Juliet.*

* OVERWHELMINGLY. *adv.* from [*overwhelming.*] In ſuch a manner as to overwhelm. Inelegant, and not in uſe.—Men ſhould not betray their ſouls to ruin for that which they call light and trivial; which is ſo indeed in reſpect of the acqueſt, but *overwhelmingly* ponderous in regard of the pernicious conſequents. *Decay of Piety.*

* OVERWISE. *adj.* [*over* and *wiſe.*] Wiſe to affectation.—Make not thyſelf *overwiſe.* *Eccl.* vii. 16.

* OVERWORN. *part.* [*over* and *worn.*] 1. Worn out; ſubdued by toil.—

With watching *overworn*, with cares oppreſt,
Unhappy I had laid me down to reſt. *Dryden.*

2. Spoiled by time.—

The jealous *o'erworn* widow and herſelf,
Are mighty goſſips in this monarchy. *Shak.*

* OVERWROUGHT. *part.* [*over* and *wrought.*] 1. Laboured too much.—A work may be *overwrought*, as well as underwrought. *Dryden's Dufreſnoy.* 2. Worked all over.—

Of Gothic ſtructure was the northern ſide,
O'erwrought with ornaments of barb'rous pride.
Pope.

3. It has in *Shakeſpeare* a ſenſe which I know not well how to reconcile to the original meaning of the word, and therefore conclude it miſprinted for *overraught*, that is *overreached* or cheated.—

By ſome device or other,
The villain is *o'erwrought* of all my money:
They ſay this town is full of cozenage. *Shak.*

* OVERYEARED. *adj.* [*over* and *year.*] Too old.

A maid, whoſe fruit was ripe, not *overyeared.*
Fairfax.

OVERYSCHE, a town of France, in the department of the Dyle, and ci-devant province of Auſtrian Brabant; ſeated on the Yſche, 6 miles NE. of Bruſſels, and 9 SW. of Louvain. Lon. 4. 30. E. Lat. 50. 53. N.

OVERYSSEL, one of the ci-devant Seven United Provinces. (See UNITED PROVINCES.) It was bounded on the N. by Frieſland and Groningen; E. by the late biſhopric of Munſter; S. by the ſame, and by the ci-devant county of Zutphen; and W. by the river Yſſel, whence its name. It was divided into three diſtricts, viz. DRENTE, TWENTE, and SALLAND. It has many moraſſes, which render it not very populous; but the turfs theſe afford are its chief riches, being dug up and exported through the republic. It alſo produces a good deal of corn. It is 60 miles long, from N. to S. and 40 broad, from E. to W. It now forms the department of the Yſſel. The capital is ZWOLL.

* OVERZEALOUS. *adj.* [*over* and *zealous.*] Too zealous.—It is not of ſuch weighty neceſſity to determine one way or the other, as ſome *overzealous* for or againſt the immateriality of the ſoul, have been forward to make the world believe. *Locke.*

OUESSANT, or USHANT. See USHANT.

OUE-TCHUEN, a town of China, in Ho-nan.

OUEZE, a river of France, which runs into the Sorque, 4 miles NNE. of Avignon.

OUGEIN, an ancient town of Hindoſtan Proper, in the province of Malwa, capital of the late Mahratta chief, Madajee Sindia. It is ſeated near the Sepra, 200 miles S. of Agimere, 340 SSW. of Delhi, and 452 SW. by S. of Poonah. Lon. 75. 56 E. Lat. 23. 27. N.

(1.) * OUGHT. *n. ſ.* [*aphit*, that is, a *whit*, Saxon. This word is therefore more properly written *aught*. See AUGHT.] Any thing; not nothing.—For *ought* that I can underſtand, there is no part but the bare Engliſh pale, in which the Iriſh have not the greateſt footing. *Spenſer on Ireland.*—He aſked him if he ſaw *ought*. *Mark*, viii. 23.—

To do *ought* good never will be our taſk;
But ever to do ill our ſole delight. *Milton.*

Univerſal Lord! be bounteous ſtill
To give us only good; and if the night
Have gather'd *ought* of evil, or conceal'd,
Diſperſe it. *Milton.*

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(2.) * OUGHT. *verb imperfect;* in the second person *oughteſt*. [This word the etymologiſts make the preterite of *owe*, but it has often a preſent ſignification.] 1. [Preterite of *owe*.] Owed; was bound to pay; have been indebted.—I will add a continuance to that happy motion, and beſides give you ſome tribute of the love and duty I long have *ought* you. *Spelman.*—

That followed, Sir, which to myſelf I *ought*.
Dryden.

2. To be obliged by duty.—Know how thou *oughteſt* to behave. *Timothy.*—Speak boldly as I *ought* to ſpeak. *Epheſians.*—

She acts juſt as ſhe *ought*,
But never, never reach'd one gen'rous thought.
Pope.

—Judges *ought* to remember, that their office is to interpret law, and not to make or give law. *Bacon.*—We *ought* to profeſs our dependence upon him, and our obligations to him for the good things we enjoy. We *ought* to publiſh to the world our ſenſe of his goodneſs with the voice of praiſe, and tell of all his wondrous works. We *ought* to comfort his ſervants and children in their afflictions. *Nelſon.* 3. To be fit; to be neceſſary.—Theſe things *ought* not ſo to be. *James.*—If grammar *ought* to be taught, it muſt be to one that can ſpeak the language already. *Locke.* 4. Applied to perſons, it has a ſenſe not eaſily explained. To be fit, or neceſſary that he ſhould.—*Ought* not Chriſt to have ſuffered? *Luke.* 5. *Ought* is both of the preſent and paſt tenſes, and of all perſons except the ſecond ſingular.

OUGHTERAH, a town of Ireland, in Waterford county, and prov. of Munſter.

OUGHTERARD, a town of Ireland, in Galway, Connaught, 119 miles from Dublin.

OUGHTERGAVEN. See AUCHTERGAVEN.

OUGHTRED, William, an eminent mathematician, born and educated at Eton, in 1573, whence he was ſent to King's college in Cambridge, of which he afterwards became fellow. Being admitted to holy orders, he left the univerſity about 1603, and was preſented to the rectory of Aldbury, near Guildford in Surry; and about 1628 was appointed by the earl of Arundel to inſtruct his ſon in the mathematics. He correſponded with ſome of the moſt eminent ſcholars of his time, upon mathematical ſubjects; and the moſt celebrated mathematicians of that age owed moſt of their ſkill to him, as young gentlemen came from all parts to receive his inſtructions. Upon hearing the news of the vote at Weſtminſter, for the reſtoration of King Charles II. he expired in a ſudden tranſport of joy, aged 88. He wrote, 1. *Clavis Mathematica;* afterwards publiſhed in Engliſh. 2. A deſcription of the double horizontal dial. 3. *Opuſcula Mathematica;* and ſeveral other works. He left alſo behind him a great number of papers upon mathematical ſubjects, in the muſeum of William Jones, Eſq. F. R. S. He had one ſon, whom he bred a watchmaker, and wrote a book of inſtruction in that art for his uſe.

(1.) OUGUELA, a town of Africa, in Tripoli.

(2.) OUGUELA, a town of Portugal, in Alentejo; 4½ miles NNE. of Campo Mayor, and 6 S. of Albuquerque.

OU-HO, a town of China, in Kiang-nan.

OUIATANON, a fort of the United States in the North-Weſtern Territory, on the W. bank of the Wabaſh, 130 miles S. of Fort St Joſeph. Lon. 87. 58. W. Lat. 40. 38. N.

(1.) OVID. See OVIDIUS.

(2.) OVID, in geography, a townſhip of New York, in Onondago county; incorporated in 1794, and comprehending the land on the W. bank of Lake Seneca. In 1796, it had 107 citizens qualified to be electors.

OVIDIUS NASO, Publius, a celebrated Latin poet of the Auguſtan age, was a Roman knight, born at Sulmo, A. A. C. 43. He ſtudied rhetoric under Aurelius Fuſcus, and for ſome time frequented the bar. His progreſs in eloquence was great, but nothing could deter him from purſuing his natural inclination to poetry. Every thing he wrote was expreſſed in poetical numbers. A lively genius and a fertile imagination ſoon gained him admirers: the learned became his friends; Virgil, Propertius, Tibullus, and Horace, honoured him with their correſpondence, and Auguſtus patroniſed him with the moſt unbounded liberality. Soon, however, he incurred his diſpleaſure, and was baniſhed to Tomos, a city on the Pontus Euxinus, near the mouth of the Danube, when he was 50 years of age. The cauſe of this exile is unknown, but ſeveral paſſages indicate that it was ſomething he knew improper of the family of Auguſtus. His writings in exile, although full of flattery and impatience, failed to procure him a pardon, and he died in the 7th or 8th year of his baniſhment, in the 57th year of his age. He was buried at Tomos. The greateſt part of his poems are extant, conſiſting of his *Metamorphoſes*, his *Faſti*, his *Triſtia*, *Elegies*, the *Heroides*, three books *Amorum*, and three *de Arte Amandi*, with the other *de Remedio Amoris*, his *Ibis*, and fragments of other poems, among which are part of a tragedy called *Medea*. His *Epiſtles from Pontus* are the language of a mean flatterer; but all his poetry is excellent.

OVIEDA, in botany, a genus of the angloſpermia order, belonging to the didynamia claſs of plants; and in the natural method ranking under the 40th order, *Perſonatæ*. The calyx is quinquefid; the tube of the corolla almoſt cylindrical above, and very long; the berry globoſe and diſpermous.

(1.) OVIEDO, a city of Spain, capital of Aſturias d'Oviedo, with a biſhop's ſee, and an univerſity; ſeated at the confluence of the Ove and Deva, which form the Aſta, 50 miles NW. of Leon, and 208 NW. of Madrid. Lon. 5. 47. W. Lat. 43. 23. N.

(2.) OVIEDO, John Gonſalvez DE, born at Madrid about 1478, was ſent by Ferdinand V. to the iſland of Haiti, (now St Domingo) as intendant and inſpector general of the trade of the New World, and on his return to Spain publiſhed *Summario de la Hiſtoria general y natural de las Indias Occidentales.*

* OVIFORM. *adj.* [*ovum* and *forma*, Lat.] Having the ſhape of an egg.—This notion of the mundane egg, or that the world was *oviform*, hath been the ſenſe and language of all antiquity. *Burnet.*

OVILIA, or SEPTA, a place in ancient Rome, in the Campus Martius, at firſt railed in like a ſheep-pen, whence its name. Afterwards it was mounted with marble, and beautified with walks and

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OVIS.

Steatopyga Ruſsian Sheep

Fig. 1.

Fig 3.

Fig 7 The Siberian Argali or Wild Sheep

Fig 2.

Fig 4.

Fig 5. Ruſsian Sheep

Fig 10. African Ram or Ram of Tunis

Fig 8. Common Ram

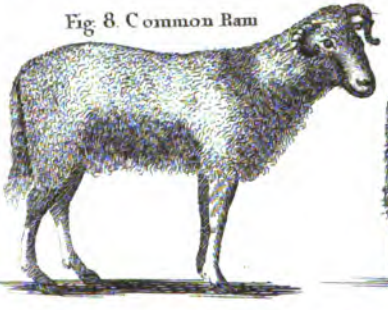


Fig 9. Ewe.

Fig 6. Ruſsian Sheep

Fig 14. Morvant of China

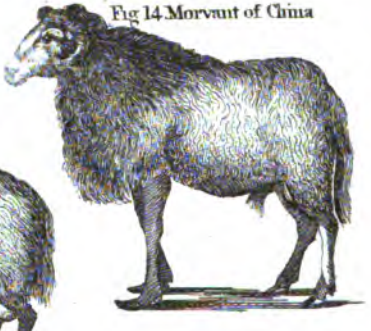


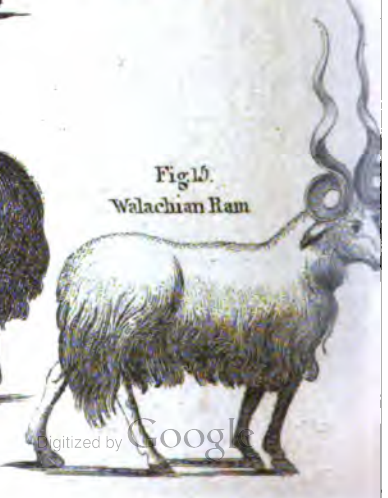
Fig 13. Spaniſh Ewe

Fig 12. Spaniſh Ram

Fig 11. Cape Sheep

Fig 16. Walachian Ewe.

Fig 15. Walachian Ram



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T. Clarke Sculpt.

and galleries, as also with a tribunal, or a seat of Justice. Within this precinct or inclosure, the people were called to give their suffrages for the election of magistrates. The ascent into the ovilia was not by stairs, but by *pontes*, or narrow boards, laid there for the occasion; on which account, *de ponte dejici* signified "to be deprived of the privilege of voting;" and persons thus dealt with were called *depontani*.

OUILLY, a town of France, in the dep. of Calvados; 6 miles W. of Falaise, and 18 S. of Caen.

OVINIA LEX, the } a law of ancient Rome,
OVINIAN LAW, } enacted to permit the censors to elect and admit among the senators the most virtuous and worthiest of the citizens.

OUINICHTAGAN, a lake of Lower Canada, 183 miles N. of Quebec.

* OVIPAROUS. *adj.* [*ovum*, and *pario*, Latin.] Bringing forth eggs; not viviparous.—That fishes and birds should be *oviparous* is a plain sign of providence. *More.*—Birds and *oviparous* creatures have eggs enough at first conceived in them to serve them for many years laying. *Ray.*

(I.) OVIS, the SHEEP, in zoology, a genus of the mammalia class, and of the order of pecora. The characters are these: The horns are concave, turned backwards, and full of wrinkles; there are eight fore-teeth in the under jaw, and no dog-teeth. The wool of these animals is only a congeries of very long and slender hairs oddly twisted and contorted, and variously interwoven with one another. This, as far as is yet known, is a clothing peculiar to the sheep kind, no other animal having been seen to possess it. It is not, however, the clothing of all the species of sheep, some that are found in distant nations having short hair like that of the goat. See *Plate* CCLXIV.

(II.) OVIS, DR LINNÆUS'S ARRANGEMENT OF THE SPECIES OF. Linnæus enumerates three species; viz.

1. OVIS ARIES, or the *ram-sheep*, the horns of which are shaped like a half-moon, and compressed.

2. OVIS GUINEENSIS, the *Guinea sheep*, which has pendulous ears, lax hairy dewlaps, and a prominence on the hind part of the head. The wool is short like that of a goat. It is a native of Guinea.

3. OVIS STREPSICEROS, or the *Cretan sheep*, which has straight cariated horns, twisted in a spiral manner, and is a native of Mount Ida.

(III.) OVIS, DR PALLAS'S ARRANGEMENT AND DESCRIPTION OF THE SIBERIAN VARIETIES OF. Dr Pallas, in his very extensive travels in the Russian empire, more particularly in Siberia and amongst the pastoral nations of Great Tartary, found what he regards as only one species of sheep, subdivided into four varieties.

i. OVIS BRACHIURA, the *short-tailed sheep*, is called the *Russian sheep* by the natives. It seems to be the *ovis Islandicus* of authors, with smaller horns. It is reared throughout all the north of Russia, and resembles that of Iceland in size, tail, and coarseness of fleece; but though this be the case in these few respects, yet it differs from it in a very essential character, that of *horns*, which are much smaller, and have nothing of that exuberance which Buffon and others attribute to the sheep of that island. It resembles the Tscherkessian sheep in the form of its head, straight upright ears, and in thickness of fleece; but the quality of the two fleeces are very different, this variety having wool almost as coarse as dog's hair; but the great distinguishing character between them is the tail, which is almost a quarter of a yard shorter than that of the Tscherkessian. The brachiura, or short-tailed sheep, is reared not only by the northern Russians, but likewise by the Fins and other neighbouring nations. Some of this variety have been transported into Siberia, where they have supported themselves on some pastures, though in poor condition; but through all the southern countries they are in less estimation than the long-tailed and fat-tailed varieties, which are much superior to them for size, fat, and good eating. The ewe of this short-tailed variety couples readily with the ram of the steatopyga or fat-tailed breed, and produces an animal nobler and larger than its mother, with a tail swelled at the base with fat, but meagre towards the end like that of the mixed breed, which makes Dr Pallas's fourth and last variety of domestic sheep. The ewe also couples clandestinely with the domestic he-goat, and produces an animal much resembling the mother, but with a fleece of wool and hair. This latter is a fact of the truth of which we have some doubt. The Doctor may easily have been misled, and may have adopted his opinion, merely from the shaggy appearance of the fleece of some breeds of sheep, which much resembles the hair of a goat; but these are found as well in countries where no goats exist as in those where they abound. The fact has not then, we think, been sufficiently ascertained. This variety supports extremely well the severity of a northern climate, and Dr Pallas doubts not but it might pass the winter in the plains of mountainous northern countries where there is not much snow; nay, he even thinks it might augment their hardness and strength, if we are to judge from the habits and treatment of the Iceland flocks, so well described by Anderson in his account of that island. Dr Pallas remarked, that on mountainous pastures exposed to the sun, such as on the acclivity of the Ouralic chain, the Russian or short-tailed sheep were larger, fatter, and had a finer fleece. Crossing the breed with the Tscherkessian or long-tailed sheep likewise mends both the stature and fleece of the brachiura; whereas, in its own natural state, without admixture of other varieties of sheep, it is but small, lean, and produces, in the northern parts of Russia, a wool so extremely coarse as only to be fit for the cloth of peasants in a state of vassalage. Whether coarseness of wool and leanness be indeed characteristical marks of this species, is, we think, extremely doubtful; we are rather inclined to consider them as mere accidental differences.

ii. OVIS BUCHARICA is by Pallas called *bucharian*, from his finding it reared by the Bucharian Tartars in immense flocks. It is also raised by the Persians in great numbers. Dr Pallas regards this as a mixed breed, arising, as he supposes, from the union of the *long-tailed* and *fat-tailed* sheep. (See N° iii. and iv.) The Doctor does not think that they ever attain to the size of either of their parents; though, as he never saw any full grown,

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grown, he does not ſpeak poſitively upon the ſubject. The head of this variety is like that of the Kirguiſe; but the muzzle is ſharper, reſembling the Indian of Buffon; the body is rather ſmaller than that of the Kirguiſe ſheep; the ears are large and pendant; they have a ſmall uropygium, like that of the Tartar ſheep on the Jeniſy, eſpecially when begotten by a Kirguiſe ram; but in general they have a *tail* fat and broad at the baſe, with a long narrow appendage, which reſembles the tail of the Tſcherkeſſian ſheep. The Boucharian Tartars have a very valuable traffic with the furs of the lambs of this variety, which are exquiſitely fine and beautiful. This ſame variety is likewiſe raiſed in great numbers by the Perſians; and it is more than probable, if we are to give credit to authors ancient and modern, that this variety obtains in Syria, Paleſtine, and divers countries of Africa, known to them by the name of *ovis macrocereus*. It differs in all thoſe countries from the fat-tailed, or ſteatopyga of Pallas, in having a long tail, fat and broad above, with a long narrow appendage, which is exactly the great marked character of the Boucharian breed. Pliny tells us, that the Syrian ſheep have long fat tails, and carry wool; and by Ruſſel's account of them, in his Natural Hiſtory of Aleppo, they reſemble the Kirguiſe ſheep in the head, face, and ears hanging on the cheeks; but the tail is that of the Boucharian, fat above, with a long lean appendage. He adds, that they are covered with a ſoft wool, which is another trait of reſemblance with our preſent variety; and that they weigh ſometimes 150 pounds, one-third of which is the weight of the tail. Geſner, in his work on quadrupeds, tells us, that the Arab ſheep of Kay have nearly the ſame characteriſtic marks, eſpecially with regard to the tail. Shaw relates in his Travels, that ſheep with ſuch a compound tail are common in Mauritania and in all the Eaſt; whilſt Kolbe aſſures us, that the ſheep which are brought on board the ſhips at the Cape of Good Hope have tails weighing 25 or 30 lb. fat above, with a bony appendage hanging from it; and, laſtly, the Abbe Demanent, in his new Hiſtory of Africa, ſays, that the ſheep are found in Africa covered with wool, and with ſuch a tail as we have been deſcribing; whilſt at Cape Guarda, in the S. of Africa, all the ſheep are white, with rather ſmall black heads, otherwiſe a large handſome breed, with broad fat tails, ſix or eight inches long. The Doctor quotes ſeveral paſſages from Moſes, in proof that the Boucharian ſheep obtain in Syria, Paleſtine, and divers countries of Africa; from Levit. viii. 25. ix. 19.

iii. OVIS DOLICHURA, the *Long-tailed Sheep*, is named both by the Tartars and Ruſſians *Tſcherkeſſian* ſheep; it is the *ovis longicauda* of authors. It is a handſome animal, with a noble air, in its native country and the ſouth of Ruſſia, reſembling, in its habits, horns, fleece, and length of tail, the Spaniſh, but more particularly the Engliſh ſheep. Its head is well proportioned, and of an elegant form; ears ſtraight; horns large, even, rounded in the angles, tapering to a point, and bending inwardly towards the back. The rams are ſeldom without horns, and the ewes have them often bent in a lunar form. The wool, though coarſe, is without admixture of hair, which is perhaps but an accidental diſtinction, and promiſes to be much meliorated by croſſing the breed, and rearing the animal with more care and ſkill. It is even known to become much finer without the aſſiſtance of art, merely from the influence of a temperate climate, as on Mount Caucaſus. The tail of the ram is covered with fine long wool, like the Indian ſheep deſcribed by Buffon, which trails on the ground, ſo as to efface the prints made by the animal's feet on ſand, and it contains often 20 joints or vertebræ. In paſſing from the ſtate of nature to that of ſervitude, it ſeems to have loſt its native ferocity, together with its coarſe fleece. Dr Pallas ſays it is a mild gentle animal, and is leſs *degenerated in form* from the argali, which, according to his ſyſtem, is the parent ſpecies, than the ſteatopyga, which, on the other hand, has preſerved much more of its wildneſs than the Tſcherkeſſian; perhaps becauſe it is allowed to range with little reſtraint on the wide extended plains of Great Tartary. The Tſcherkeſſian is reared in all the European regions of the Ruſſian empire, ſituated on this ſide of the river Occa, in the nearer Poland, and by the paſtoral people of Mount Caucaſus; and they are commonly of a white colour. The ſame variety, we are told by Ruſſel, in his natural hiſtory of Aleppo, is reared under the name of *Bedouin ſheep* by the Arabs, and in the weſtern parts of Mauritania, with a trifling difference in the length and thickneſs of the tail. There are likewiſe ſheep in Morocco, which belong to this variety, on account of the diſtinguiſhing character of it, a long tail, although otherwiſe different, in having an ugly look, head covered entirely with hair, little hanging ears, and remarkably long wool. The Indian and Guinea ſheep, ſo well deſcribed by Buffon, reſemble the Tſcherkeſſian only in the length of their tail, whilſt in other reſpects they come nearer to the ſteatopyga, or fat-rumped ſheep of Pallas, in ſize, form, and fleece mixed with hair. The learned naturaliſt is of opinion, that the arid burning deſarts produce this change on the wool; but his reaſoning on this head is to us at leaſt as little ſatisfactory as that by which he endeavours to prove the argali to be the parent ſpecies. The inhabitants of Ukraine and Padoli carry on an extenſive and valuable traffic with the ſkins of Tſcherkeſſian ſheep, the beauty of which they heighten in a very curious manner.

iv. OVIS STEATOPYGA, the *fat-tailed ſheep*, has appellations as various as the provinces where it is reared; it is the *ovis laticaudata* of authors. This is both the moſt abundant and largeſt breed of ſheep in the world. It is reared throughout all the temperate regions of Aſia, from the frontiers of Europe to thoſe of China, in the vaſt plains of Tartary. All the Nomade hordes of Aſia, the Turcomans, Kirguiſe, Calmucks, and Mongul Tartars rear it; and, indeed, it conſtitutes their chief riches, the number they poſſeſs being enormous. The Perſians alſo rear it in abundance; as likewiſe the Hottentots, as we are informed by Kolbe in his Travels to the Cape of Good Hope; whilſt Oſbeck, in his Journey to China, aſſerts, that the fat-tailed ſheep are reared through the whole empire. We are told alſo by

Tſcherkeſſian

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Shaw and the Abbe Demanent, that the ſame breed obtains in Syria, Mauritania, and the other regions of Africa, under ſome different modifications of form, from different cauſes; ſo that Dr Pallas thinks there is ſufficient evidence that the ſteatopyga, or fat-rumped ſheep, is the moſt univerſally reared and multiplied of any breed in the world. The flocks of all the Tartar hordes reſemble one another by a large yellowiſh muzzle, the upper jaw often projecting beyond the lower; by long hanging ears; by the horns of the adult ram being large, ſpiral, wrinkled, angular, and bent in a lunar form. The body of the ram, and ſometimes of the ewe, ſwells gradually with fat towards the poſteriors; where a ſolid maſs of fat is formed on the rump, and falls over the anus in place of a tail, divided into two hemiſpheres, which take the form of the hips, with a little button of a tail in the middle, to be felt with the finger. (See A, *fig.* 7, *plate* CCLXIV.) The *uropygium*, or fat rump, which is made up of this oily ſpecies of fat, is ſo very large as to incommode the animal in walking; but when the ſame ſheep are carried into the interior parts of Ruſſia, the tail loſes half its ſize and weight, nay ſometimes more, from a change in their food and mode of life. This variety, beſides the characters mentioned above, have ſlender legs in proportion to their bodies, a high cheſt, large hanging teſticles, a large prepuce, and tolerably fine wool mixed with hair. Such are the great characteriſtic marks by which the flocks of all the Tartar hordes reſemble one another; but climate, ſoil, &c. produce ſome ſmall difference on this variety, whether reared by the Tartars or the Ruſſians, in the weſtern deſerts of Great Tartary, from the river Volga to the Irtiſh, and the Altaic chain of mountains. *Fig.* 1. and 2. *pl.* CCLXIV. is a ſide and back view of the ſteatopyga; letters A *a* of the ram, in its greateſt purity of breed, as obtaining among the Kirguiſe Tartars in the vaſt plains of Southern Tartary. The poſition of the animal marked *a*, *fig.* 2. ſhows the uropygium or fat rump; *b*, *fig.* 3. repreſents the head with a couple of noneola hanging from the neck, called by the Ruſſians *ear-rings*. C is another Kirguiſe ram with five horns, *fig.* 4. ſhowing at ſame time the hanging poſition of the ears of this variety. Fig. 5. is a drawing of a degenerate breed of the ſteatopyga variety of ſheep, reared on the banks of the Jeniſy and Volga, without horns, and with the uropygium or fat rump greatly diminiſhed, and one noneola. Letter *b*, *fig.* 6. is a drawing of a ram of the ſame variety of ſheep, from the flocks of the Jeniſy Kirguiſe, with four horns ſymmetrically arranged by nature, as is frequently the caſe with this breed.

(IV.) OVIS, Mr KERR'S ARRANGEMENT OF THE SPECIES AND VARIETIES OF Mr KERR, in his tranſlation of Dr Gmelin's Zoological Syſtem of Linnæus, gives a more complete and ſatisfactory claſſification of this genus than any of the authors above quoted. He enumerates 4 ſpecies and 15 varieties; viz.

i. 1. OVIS AMMON, the ARGALI, or OVIS FERA of Dr Pallas; or the *Wild Sheep* of Mr Pennant. The horns are large, ſemicircularly arched backwards and divergent, wrinkled on their upper ſurface, and flattiſh on the under ſide; the neck has two pendent hairy wattles. Dr Pallas paid particular attention to this ſpecies. He ſays, he "found the *ovis fera*, or wild ſheep, in all its native vigour, boldneſs, and activity, inhabiting the vaſt chain of mountains which run through the centre of Aſia to the eaſtern Sea, and the branches which it ſends off to Great Tartary, China, and the Indies. This wild animal, which our learned naturaliſt declares to be the MUSIMON of Pliny, and the *ophion* of the Greeks, is called *argali* by the Siberians, which means wild ſheep; and by the Ruſſians *kamennoi barraun*, or ſheep of the rocks, from its ordinary place of abode. It delights in the bare rocks of the Aſiatic chain juſt mentioned, where it is conſtantly found baſking in the ſun; but it avoids the woods of the mountains, and every other object that would intercept the direct rays of the glorious luminary. Its food is the Alpine plants and ſhrubs it finds amongſt the rocks. The argali prefers a temperate climate, although he does not diſdain that of Aſiatic Siberia, as there he finds his favourite bare rocks, ſunſhine, and Alpine plants; nay, he is even found in the cold eaſtern extremity of Siberia and Kamtſchatka, which plainly proves that nature has given a moſt extenſive range to the ſheep in a wild ſtate, equal even to what ſhe has given to man, the lord of the creation; a fact that ought to make us ſlow in believing the aſſertions not uncommon, which tend to prove the ſheep a local animal; or at leaſt that it muſt be confined to certain latitudes, to poſſeſs it in all its value. The argali loves ſolitude, or poſſibly perfect liberty, and therefore flees the haunts of all-ſubduing man; hence it gradually abandons a country in proportion as it becomes peopled, if no unſurmountable obſtacle obſtructs its flight; inſomuch that Dr Pallas thinks, that nothing but the ſurrounding ſea can account for wild ſheep being found in an inhabited iſland, as is ſometimes the caſe. The ewe of the argali brings forth before the melting of the ſnow. Her lamb reſembles much a young kid, except that it has a large flat protuberance in place of horns, and that it is covered with a woolly hair, frizzled, and of a dark grey. There is no animal ſo ſhy as the argali, which it is almoſt impoſſible to overtake on ſuch ground as it keeps to. When purſued, it does not run ſtraight forward, but doubles and turns like a hare, at the ſame time that it ſcrambles up and over the rocks with wonderful agility. In the ſame proportion that the adult argali is wild and untameable, the lamb is eaſily tamed when taken young, and fed firſt on milk and afterwards on fodder, like the domeſtic ſheep, as has been found on numerous experiments made in the Ruſſian ſettlements in theſe parts. This animal formerly frequented the regions about the upper Irtiſh, and ſome other parts of Siberia, where it is no longer ſeen ſince colonies have been ſettled in theſe countries. It is common in the Mongalian, Songarian, and Tartarian mountains, where it enjoys its favourite ſolitude or liberty. The argali is found likewiſe on the banks of the Lena, up as high as 60° of Lat. N.; and it propagates its ſpecies even in Kamtſchatka, as noticed before. The argali is alſo found in the mountains of Perſia, and is ſaid to obtain

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obtain in the Kuril islands in great size and beauty. The argali is about the height of a small hart, but its make is much more robust and nervous. Its form is less elegant than that of the deer, and its legs and neck shorter. The male is larger than the female, and every way stouter. Its head resembles that of a ram, with long straggling hairs about the mouth; but no beard. Its ears are rather smaller than those of a ram. The horns are exactly represented in the plate; they weigh in an adult sometimes 16 pounds. The tail is very short. The summer coat consists of short hair, sleek, and resembling that of a deer. The winter coat consists of wool like down, mixed with hair everywhere an inch and an half long at least, concealing at its roots a fine woolly down, generally of a white colour. The colour of its coat was in general of a dark greyish brown, with white tips to the longer hairs, and consisted of hair mixed with wool, of a dark iron grey. By accounts lately received from the Tshutski, the argali is found of a white colour on the continent of America, opposite to their country. It is likewise of a whitish colour at Kamschatka. See *Plate* CCLXIV, *fig.* 7.

2. Ovis Ammon Europæa, the *Corsican Argali*, is a variety mentioned by Mr Kerr on the authority of Mr Pennant, differing from the above chiefly in colour; having a large white spot on the neck and being black on the shoulders. In Corsica it is called *Mufro*.

li. Ovis Aries, the common Sheep, has the horns spirally twisted outwards. The disposition of the sheep is so mild and gentle, that although in its wild state, it fears not to defend itself against the most formidable antagonists; yet, when domestic, it is the most timid and apparently defenceless of all animals. It is of the most extensive utility to man. We are clothed by its fleece. The flesh is a delicate and wholesome food. The skin, dressed, forms different parts of our apparel; and is used for covers of books. The entrails, properly prepared and twisted, serve for strings for various musical instruments. The bones calcined form materials for tests for the refiner. The milk is thicker than that of cows, and consequently yields a greater quantity of butter and cheese; and in some places is so rich, that it will not produce the cheese without a mixture of water to make it part from the whey. The dung is a remarkably rich manure; insomuch that the folding of sheep is become too useful a branch of husbandry for the farmer to neglect. In short, this animal has nothing that does not redound to our benefit. The ram is capable of generation at the age of 18 months; and the ewe can be impregnated when a year old. One ram is sufficient, according to Buffon, for 25 or 30 ewes; they have often been known indeed to beget 100 lambs in a single season. He ought to be large and well proportioned; his head should be thick and strong, his front wide, his eyes black, his nose flat, his neck thick, his body long and tall, his testicles massy, and his tail long. White is the best colour for a ram. The ewes, whose wool is most plentiful, bushy, long, soft, and white, are most proper for breeders, especially when at the same time they are of a large size, have a thick neck, and move nimbly. In this climate ewes fed in good pastures admit the ram in July or August; but September or October are the months when the greatest part of our ewes, if left to nature, take the ram. They go with young about five months, and generally bring forth but one at a time, though frequently two: in warm climates, they may bring forth twice in a year; but in Britain, France, and most parts of Europe, only once. They give milk plentifully for 7 or 8 months. They live from 10 to 12 years: they are capable of bringing forth as long as they live, when properly managed; but are generally old and useless at the age of 7 or 8 years. The ram though he lives 12 or 14 years, becomes unfit for propagating when 8 years old. When the male lambs are not intended to be kept for propagation, but fattened for food, they ought to be castrated at the age of 5 or 6 months. This operation is performed two ways: in the one, an incision is made, and the testicles taken; in the other, a ligature is tied tight round the scrotum, above the testicles, which soon destroy the vessels which nourish them. After castration they are called Wedders. The ram, ewe, and wedder, when one year old, lose the two fore teeth of the under jaw; six months afterwards, they lose the two fore teeth next to these; and at the age of 3 years, the teeth are all replaced. The age of a ram may likewise be discovered by his horns, which always appear the first year, and frequently as soon as he is brought forth. These horns uniformly acquire an additional ring every year, as long as the creature lives. The ewes commonly have no horns, but a kind of long protuberances in place of them: however, some of them have two and some four horns. As white wool is most valued, black or spotted lambs are generally slaughtered. In some places, however, almost all the sheep are black: and black lambs are often produced by the commixture of white rams with white ewes. In France, there are only white, brown, black, and spotted sheep: but in Spain, there is a reddish kind; and in Scotland there are some of a yellowish colour. But all these varieties of colour are more accidental than those produced by different races; which, however, proceed from the influence of climate, and the difference of nourishment. In the northern parts of Europe, as Denmark and Norway the sheep are not good; but, to improve the breed, rams are occasionally imported from England. The rams, ewes, and wedders of Iceland, differ chiefly from ours by larger and thicker horns. Some of them have 3, 4, and even 5 horns. This however is not common. In Spain and the southern parts of Europe, the flocks of sheep are kept in shades or stables during the night: but in Britain, where there is now no danger from wolves, they are allowed to remain without, both night and day; which makes the animals more healthy, and their flesh a more wholesome food. Dry and mountainous ground, where thyme and sheep's fescue grass abound, are the best for the pasturing sheep. Sheep are subject to many diseases: some arising from insects which deposit their eggs in different parts of the animal: others are caused by their being kept in wet pasture: for as the sheep requires

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Fig 1.
Barbary Wedder.

OVIS.

Plate CCLXV.

Fig 3
Iceland Ram.

Fig 16.
Pulex Monoculus

Fig 4. Indian Ram.

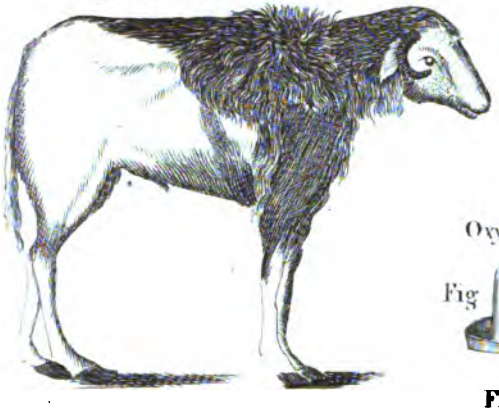


Fig 15. Pini.

Fig 2.
Broad tailed Sheep

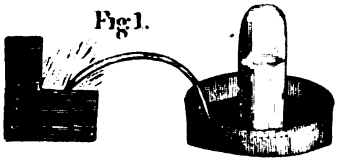
Oxygen.

Fig 2.

Fig 3.

Bleaching by Oxymuriatic Acid.

Fig 1.



Pentagraph Fig 13.

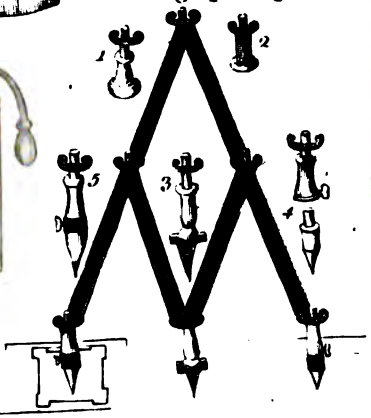


Fig 1.

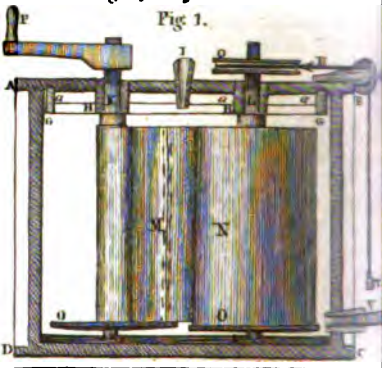


Fig. 4.

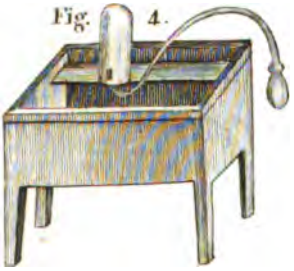


Fig. 2.

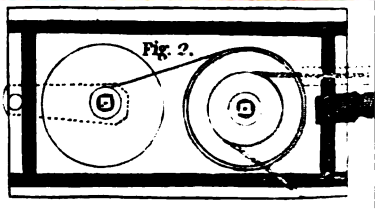
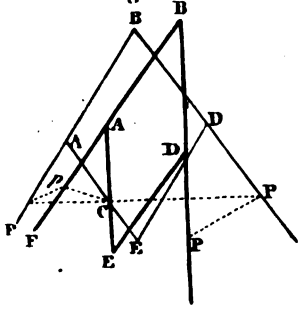


Fig 14.



PAPILIO

N° 1.

N° 2

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quires but little drink, it is naturally fond of a dry ſoil. The dropſy, vertigo (the *pendro* of the Welſh), the phthiſis, jaundice, and worms in the liver, annually make great havock among our flocks: for the firſt diſeaſe, the ſhepherd finds a remedy by turning the infected into fields of broom; which plant has been alſo found to be very efficacious in the ſame diſorder among the human ſpecies. The ſheep is alſo infeſted by different ſorts of inſects: like the horſe, it has its peculiar œſtrus or gadfly, which depoſits its eggs above the noſe in the frontal ſinuſes (ſee OESTRUS N° 4.): when theſe turn into maggots, they become exceſſively painful, and cauſe thoſe violent agitations that we ſo often ſee the animal in. The French ſhepherds make a common practice of eaſing the ſheep, by trepanning and taking out the maggot: this practice is ſometimes uſed by the Engliſh ſhepherds, but not always with the ſame ſucceſs. Beſides theſe inſects, the ſheep is troubled with a kind of tick and louſe, which magpies and ſtarlings contribute to eaſe it of, by lighting on its back, and picking the inſects off. (See SHEEP and WOOL. Of this moſt uſeful ſpecies, Mr Kerr enumerates 15 varieties, viz.

1. OVIS ARIES AFRICANA inhabits Africa, and has ſhort hair inſtead of wool. See *fig.* 10.

2. OVIS ARIES ANGLICA, the Engliſh hornleſs ſheep; has no horns; the tail and ſcrotum hang down as low as the 2d joint of the hind leg, and the wool is fine. This kind is common in moſt parts of Britain; thoſe of Lincolnſhire are the largeſt, and very ſmall breeds are found in Wales and Shetland. They have generally either no horns or very ſmall ones; and many of them have very ſhort tails.

3. OVIS ARIES BARBATA, *the Bearded Sheep*, or *Siberian Goat* of Mr Pennant, has a long divided beard, hanging down from the lower part of the cheeks and upper jaw. It is the *Tragelaphus* of Pliny. It inhabits Barbary and Mauritania. The colour is a pale ruſty brown. See *fig.* 1. *pl.* CCLXV.

4. OVIS ARIES BUCHARICA, the *Bucharian Sheep* of Pallas. See § IV. N° ii.

5. OVIS-ARIES CAPENSIS, the *Cape Sheep*, has large pendulous ears, and a large broad tail. The horns are ſhort and bent back; the body and neck are covered with long hair, or wool not curled; the legs are black and naked. See *fig.* 11.

6. OVIS ARIES GUINEENSIS, *the Guinea*, or *Wattled Sheep*. See above § III, N° 2.

7. OVIS ARIES HISPANICA, *the Spaniſh Sheep*, has horns twiſted into a ſpiral, which is lengthened outwards; the wool is very fine, and famous all over Europe. See *fig.* 12. and 13. *Pl.* CCLXIV.

8. OVIS ARIES JUBATA, *the Chineſe Morvant*, has a ſhort red and grey mane on the neck; and a long beard on the breaſt round the neck; on the ſhoulders are longiſh red grey hairs; the reſt of the body is covered with a bright yellow wool, a little curled and ſoft at the ends, but coarſe at the roots; the legs are deep red; the tail is yellow and white, with long coarſe hairs. See *fig.* 14.

9. OVIS ARIES LATICAUDATA, *the Broad-tailed Sheep*, has a long and very broad tail. This kind are common in Syria, Barbary, Ethiopia, Thibet, and Tartary. The tails are ſo long as to trail on the ground. They are ſometimes pointed at the end, but moſtly rounded; they ſometimes weigh 50 lb. and being compoſed of a ſubſtance between fat and marrow are reckoned a great delicacy. Thoſe of Thibet produce the fine wool of which ſhawls are made. See *fig.* 2. *Pl.* CCLXV.

10. OVIS ARIES LONGICAUDA, *the Long-tailed Sheep*. See above § IV, N° iii.

11. OVIS ARIES NANA, *the Dwarf Sheep*, has no horns, is of a very ſmall ſize, and has a turned up noſe. This variety is found in Lincolnſhire. The wool forms a ruff round its face. The under jaw is protruded; the noſe crooked upwards; the ears ſmall and erect.

12. OVIS ARIES POLYCERATA, *the Many-horned Sheep*; *Ovis Gotlandica* of Pallas; *the Iceland Sheep* of Buffon, has more than two horns. This variety is common in Iceland, Siberia, and Tartary; but in the ſame flocks, in which many are found with 3, 4, 5, or 6 horns, others have only the uſual pair; whence Mr Kerr thinks they can hardly form a diſtinct variety. See *fig.* 3. *Pl.* CCLXV.

13. OVIS ARIES RUSTICA, *the Ruſtic*, or *Black-faced Sheep*, is horned, the tail round and ſhort, and the wool white but rather coarſe. This is the moſt common breed of ſheep all over Europe; the horns are large, wrinkled, turned backwards in a compreſſed, ſpiral, ſcrew-like twiſt, which comes down to the ſides of the head, taking ſeveral turns, and becoming very large on old rams. The face is covered with ſhort black, dark brown, or grey hair. They are very agile, and exceedingly ſhy. The mutton is much eſteemed. The moſt perfect breed is found in Tweed-dale.

14. OVIS ARIES STEATOPYGA, *the Fat-rumped Sheep*. See above § IV, N° iv.

iii. OVIS PUDU, the PUDU, or *Capra Puda* of Molina, has round, ſmooth, divergent horns, and inhabits the Cordilleras in S. America. It is about the ſize of a half-year old kid, and lives in flocks on the mountains; whence they deſcend into the S. plains of Chili, when the hills are covered with ſnow. It reſembles a goat, but the horns are ſmall, and turned outwards, like thoſe of a ſheep. It has no beard. The female has no horns; the colour is duſky. This is the only animal of the genus which ſeems indigenous to America.

iv. OVIS STREPSICEROS, the *Cretan Sheep*, or *Wallachian Sheep* of Buffon. See above, § III, N° 3. This ſpecies inhabit Candia, and the other Grecian iſlands, and are common in Hungary and Auſtria, where they are called *Zackl*. See *Plate* CCLXIV. *fig.* 15 and 16.

OUISCONSING, a navigable river of the United States, in the North-Weſtern Territory; which communicates with Fox river, and falls into the Miſſiſippi, in Lon. 94. 84. W. Lat. 43. 33. N.

OUISCONSINGS, a tribe of N. American Indians, who inhabit the banks of the above river. They have above 300 warriors.

OUITANON, a town on the North-Weſtern Territory, on the Wabaſh.

OUITOTONONS, a nation of N. American Indians, who reſide in the North-Weſtern Territory, on the banks of the Wabaſh, near Ouiatonon. They have about 260 warriors.

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OUJULINKA, a town of Thibet.

OUKAKEE, a lake of Canada. Lon. 86. 30. W. Lat. 50. 10. N.

OUKANG, two towns of China; 1. in Tche-kiang; 2. in Hou-quang. Lon. 127. 58. E. of Ferro. Lat. 26. 40. N.

OUKERCK, a town of Holland, in the dep. of the Amſtel, 7 miles S. of Naerdin.

OUKETANACSA, a town of Aſia, in Thibet, 90 miles SE. of Laſſa.

OU-KIAM, a town of China, in Petcheli.

OU KIANG, a town of China, in Kiang-nan.

OU-KUEN, a town of China, in Yun-nan.

OULAN TABALAN, a town of Thibet.

OULCHER, a town of France, in the dep. of the Aine; 10½ miles S. of Soiſſons.

OULNEY, a town of Bucks, with a market on Monday, and a manufacture of bone-lace; 19 miles NE. of Buckingham, and 55 NNW. of London.

OU LONG, a town of China, Se-tchuen.

OULOUSTOU, a lake of Chineſe Tartary.

OULSTEEN an iſland near the coaſt of Norway, of a triangular form, 24 miles in circumference: 120 miles N. of Bergen.

OULX, or OULZ, a town and valley of France, in the dep. of the Po, and ci-devant province of Piedmont, 5 miles N. of Sezanne, 12 SW. of Suſa. It was taken by the French, in May, 1794. Lon. 6. 46. E. Lat. 45. 20. N.

OULY, or WOOLY, a kingdom of Africa, ſituated on the N. ſide of the Gambia.

OULZ See OULX.

OU-MONG, a city of China, of the firſt rank, in the prov. of Se-tchuen. Lon. 121. 15. E. of Ferro. Lat. 27. 20. N.

(1.) * OUNCE. *n. ſ.* [*ounce*, Fr. *uncia*, Lat.] A name of weight of different value in different denominations of weight. In troy weight, an *ounce* is 20 penny weight; a penny weight 24 grains.—

The blood he hath loſt,
Which I dare vouch is more than he hath
By many an *ounce*, he dropt it for his country.
Shak.

—A ſponge dry weigheth one *ounce* 26 grains; the ſame ſponge being wet, weigheth 14 *ounces* 6 drams and three quarters. *Bacon.*

(2.) *An* OUNCE is the 16th part of a pound avoirdupois, and the 12th part of a pound Troy. The word is derived from the Latin, *uncia*, the 12th part of any whole, called *as*; particularly in geometrical meaſures, an inch, or the 12th part of a foot. See AS, N° 1. § 2: and INCH, § 1.

(3.) * OUNCE, *n. ſ.* [*once*, French; *onza*, Span.] An animal between a panther and a cat.

The *ounce*,
The libbard, and the tiger, as the mole
Riſing, the crumbled earth above them threw
In hillocks. *Milt. n.*

(4.) OUNCE, in zoology. See FELIS, N° XXVIII.

OUNDLE, a town of Northamptonſhire, with a church, a free ſchool, and a market on Saturday. It is ſeated on the Nen, over which it has two bridges, 18 miles S. of Stamford, 26 NE. of Northampton, and 82 N. by W. of London. Lon. 0. 42. W. Lat. 52. 26. N.

OU-NHING, a town of China, in Kiang-ſi.

OUNSBERRY, TOPPING, a ſteep high verdant mountain of Yorkſhire, near Giſborough, in Cleveland; which affords a moſt extenſive proſpect, and ſerves mariners as a ſea mark.

OVOCA, a river of Ireland, in Wicklow, which runs into the ſea below Arklow.

OVOLO, or OVUM, in architecture, a round moulding, whoſe profile or ſweep, in the Ionic and Compoſite capitals, is uſually a quadrant of a circle: whence it is alſo commonly called the *quarter-round*. It is uſually cut with repreſentations of eggs and arrow-heads or anchors placed alternately.

* OUPHE. *n. ſ.* [*auff*, Teutonick.] A fairy; a goblin.—

Nan Page and my little ſon, we'll dreſs
Like urchins, *ouphes*, and fairies. *Shak.*

* OUPHEN. *adj.* [from *ouph*.] Elfiſh.—

Fairies, black, grey, green, and white,
You *ouphen* heirs of fixed deſtiny,
Attend your office. *Shak.*

OU-PING, a town of China in Fo-kien.

OU-POEY-TSE a name given by the Chineſe to a kind of neſts made by certain inſects upon the leaves and branches of the tree called *yen-fou-tſe*. Theſe neſts are much uſed in dyeing, and the phyſicians employ them for curing many diſtempers. Some of theſe neſts were brought to Europe, and put into the hands of the celebrated Mr Geoffroy. After having examined them with the utmoſt attention, this learned academician thought he perceived ſome conformity in them to thoſe excreſcences which grow on the leaves of the elm, and which the vulgar call *elm-bladders*: he found theſe neſts ſo ſharp and aſtringent to the taſte, that he conſidered them as far ſuperior to every other ſpecies of galls uſed by the dyers. According to him, they are the ſtrongeſt aſtringents exiſting in the vegetable kingdom. It is certain that there is a great affinity between the ou-poey-tſe and the elm-bladders. The form of both is unequal and irregular; they are covered on the outſide with a ſhort down, which renders them ſoft to the touch: within they are full of a whitiſh grey duſt, in which may be obſerved the dried remains of ſmall inſects, without diſcovering any aperture through which they might have paſſed. Theſe neſts or bladders harden as they grow old; and their ſubſtance, which appears reſinous, becomes brittle and tranſparent; however, the Chineſe do not conſider the ou-poey-tſe, notwithſtanding their reſemblance to elm bladders, as excreſcences of the tree yen-fou-tſe, upon which they are found. They are perſuaded, that the inſects produce a kind of wax, and conſtruct for themſelves on the branches and leaves of this tree (the ſap of which is proper for their nouriſhment) little retreats, where they may wait for the time of their metamorphoſis, or at leaſt depoſit in ſafety their eggs, which compoſe that fine duſt with which the ou-poey-tſe are filled. Some of the ou-poey-tſe are as large as one's fiſt; but theſe are rare, and are generally produced by a worm of extraordinary ſtrength, or which has aſſociated with another, as two ſilk worms are ſometimes ſeen ſhut up in the ſame ball. The ſmalleſt ou-

poey-tſe

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poey-tſe are of the ſize of a cheſnut; the greater part of them are round and oblong; but they ſeldom reſemble one another entirely in their exterior configuration. At firſt, they are of a dark green colour, which afterwards changes to yellow; and the huſk, though pretty firm, becomes then very brittle. The Chineſe peaſants collect theſe ou-poey-tſe before the firſt hoar-froſts. They take care to kill the worm incloſed in the huſks, by expoſing them for ſome time to the ſteam of boiling water. Without this precaution, the worm might ſoon break through its weak priſon, which would immediately burſt and be uſeleſs. The ou-poey-tſe are uſed at Peking for giving paper a durable and deep black colour; in the provinces of Kiang-nan and Tche-Kiang, where a great deal of beautiful ſattin is made, they are employed for the dyeing of the ſilk before it is put on the loom. The Chineſe literati alſo blacken their beards with them when they become white. The medicinal properties of the ou-poey-tſe are very numerous. The Chineſe phyſicians introduce them into the compoſition of many of their remedies. They recommend them for ſtopping bleedings of every kind; they conſider them as an excellent ſpecific for curing inflammations and ulcers, and for counteracting the effects of poiſon; and they employ them with ſucceſs in the dropſy, phthiſis, epilepſy, catarrh, ſickneſs, fluxions of the eyes and ears, and in many other diſorders.

OU-POU, 2 towns of China; 1. in Chenſi, on the Hoan; 2. in Honan, 25 m. E. of Hoat-King.

OUQUES, a town of France, in the dep. of the Loire and Cher, 12 miles NW. of Mer, and 15 N. of Blois.

* OUR. *pron. poſſ.* [*ure*, Saxon.] 1. Pertaining to us; belonging to us.—

You ſhall
Lead *our* firſt battle, brave Macduff. *Shak.*

Our wit is given almighty God to know,
Our will is given to love him being known.
Davies.

—*Our* ſoul is the very ſame being it was yeſterday, laſt year, twenty years ago. *Beattie.* 2. When the ſubſtantive goes before, it is written *ours*.—

Edmund, whoſe virtue, in this inſtance,
So much commands itſelf, you ſhall be *ours*.
Shak.

Thou that haſt faſhion'd twice this ſoul of *ours*,
So that ſhe is by double title thine. *Davies.*

Be *ours*, who e'er thou art,
Forget the Greeks. *Denham.*

Taxallan, ſhook by Montezuma's powers,
Has, to reſiſt his forces, called in *ours*. *Dryden.*

—The ſame thing was done by them in ſuing in their courts, which is now done by us in ſuing in *ours*. *Kettleworth.*—Reading furniſhes the mind only with materials of knowledge; it is thinking makes what we read *ours*. *Locke.*—Their organs are better diſpoſed than *ours* for receiving grateful impreſſions from ſenſible objects. *Atterbury.*

OURA, a town of Portugal, in Tralos-Montes; 9 miles S. of Chaves.

OURAL, or OURALIAN, } Mountains of Ruſſia, anciently called *Riphæi*. See Mountains, § 8, Riphæan, and Uralian.

OURCIERES, a town of France, in the dep. of the Upper Alps; 10 miles N. of Gap.

OUREM, a town of Portugal, in Eſtremadura, with a caſtle, on a mountain, between the Leira and Tomar, containing about 1800 citizens. Lon. 7. 40. W. Lat. 39. 34. N.

OURET. See Ourt.

OURFA, or Urfa, a town of Aſiatic Turkey, in Diarbekir, anciently called Edeſſa. See Edessa.

OURIQUE, a town of Portugal, in Alentejo, famous for a victory obtained by Alphonſo K. of Portugal, over 5 Mooriſh kings, in 1139. It has about 2000 inhabitants, and is about 24 miles SW. of Beja, and 32 SE. of Liſbon. Lon. 8. 49. W Lat 38. 26. N.

OURLES. See Medicine, *Index*.

OURLIAC, a town of France, in the dep. of the Dordogne; 15 miles SSE. of Belvez.

OUROE, an iſland of Denmark, in the Gulf of Iſefiord, near Zealand, 4 miles NE. of Holbeck.

OUROOSTE, a ſmall but populous iſland of the E. Indies, 4 miles from Batavia. It is only 3 4ths of a mile long, and half a mile broad. It has a ſtrong fort.

OUROUGERD, a town of Perſia, in Irac.

OUROUX, a town of France, in the dep. of the Nievre; 7 miles N. of Chateau Chinon.

OURRY, or New Alderney, an iſland in the S. Pacific Ocean, diſcovered by Capt. Carteret in 1767. It is one of Queen Charlotte's Iſlands; and is about 10 miles long and 5 broad. Lon. 165. 19. E. Lat. 11. 10. S.

OURSE, a river of France, which runs into the Seine at Bar.

* OURSELF is uſed in the regal ſtile.—

To make ſociety
The ſweeter welcome, we will keep *ourſelf*
Till ſupper-time alone. *Shak. Macbeth.*

We *ourſelf* will follow
In the main battle. *Shakeſpeare.*

—Not ſo much as a treaty can be obtained, unleſs we would denude *ourſelf* of all force to defend us. *Clarendon.*

* Ourselves. *reciprocal pronoun.* [the plural of myſelf.] 1. We; not others: it is added to *we* by way of emphaſis or oppoſition.—*We ourſelves* might diſtinctly number in words a great deal farther than we uſually do, would we find out but ſome fit denominations to ſignify them by. *Locke.* 2. Us; not others, in the oblique caſes.—

Safe in *ourſelves*, while on *ourſelves* we ſtand,
The ſea is ours, and that defends the land. *Dryd.*

—Our confeſſion is not intended to inſtruct God, who knows our ſins much better than ourſelves do, but it is to humble *ourſelves*. *Duty of Man.*

(1.) OURT, } or Ourt, a river of Germany,
(1.) OURTA, } now included in the French Em-
(1.) OURTE, } pire; which runs through the department named from it, and falls into the Meuſe at Liege.

(2.) Ourte, a department of France, one of the 9 that were formed out of the ci-devant Auſtrian Netherlands, comprehending the late principality and biſhopric of Liege. The capital is Liege. See Liege, N° 1, and 2.

OURTON-Poulac, a town of Aſia in Thibet.

OURUCZE, a town of Poland, in Volhynia.

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OURVELLE, a town of France, in the dep. of the Lower Seine, 6 miles SW. of Cany.

OUSBY, a town of Sweden, in Schonen.

OUSCOTTA, a town and fort of Hindooſtan, in Myſore; 15 miles NE. of Bangalore, taken by the Britiſh, under Earl Cornwallis, in April, 1791.

(1.) * OUSE. *n. ſ.* Tanner's bark; rather *ooſe*. *Ainſworth.*

(2.) OUSE, in geography, a river of Suſſex, formed by two ſtreams, which riſe, the one in St Leonard's foreſt, the other in that of Worth; it then paſſes by Lewis, and falls into the Channel below Newhaven, where it forms a good harbour at its mouth.

(3.) OUSE, a river of Yorkſhire, formed by the conflux of the Eure and the Swale, 4 miles below Boroughbridge; after which it paſſes by Aldborough, York, Selby, &c. and after receiving the Wharf from the NW. the Derwent from the NE. the Aire from the W. the Don from the SW. joins the Trent on the borders of Lincolnſhire; where the united ſtreams form the Humber, 17 miles W. of Hull. See HUMBER.

(4.) OUSE, a river of Canada, which runs into Lake Erie, in Lon. 79. 30. W. Lat. 42. 50. N.

(5.) OUSE, GREATER, a river of England, which riſes near Fitwell in Oxfordſhire, and proceeds to Buckingham, Stony-Stratford, and Newport-Pagnel, in Buckinghamſhire; from thence it proceeds to Bedford, and turning north-eaſt it paſſes on to Huntingdon and Ely, till at length it arrives at Lynn-Regis in Norfolk, and falls into the ſea. It is navigable to ſome diſtance above Downham, where there is a good harbour for barges; and a conſiderable trade is carried on by it to Lynn and other towns. It is liable to great floods at the equinoxes.

(6.) OUSE, LESSER, riſes in Suffolk, and, ſeparating that country from Norfolk on the SW. runs into the Greater Ouſe near Downham.

(7.) OUSE, NORTHERN. See N° 3.

(1.) * OUSEL. *n. ſ.* [*oſle*, Saxon.] A blackbird.—

The merry lark her matins ſings aloft,
The *ouſel* ſhrills, the ruddock warbles ſoft. *Spenſ.*

The *ouſel* cock ſo black of hue,
With orange-tawney bill. *Shakeſpeare.*

—Thruſhes and *ouſels*, or blackbirds, were commonly ſold for three pence a-piece. *Hakewill.*

(2.) *The* OUSEL is a ſpecies of MOTACILLA.

OUSIOUT, a province of Egypt. Its revenue amounts to 1,150,000 ardebs of 192 livres each.

OUSOOR, a town of Indoſtan, in Myſore; 19 miles SE. of Bangalore, and 69 ENE. of Seringapatam. It was taken by the Britiſh under Lord Cornwallis, aſſiſted by the Mahrattas, with all the adjacent forts, on the 18th July 1791. See INDIA, § 18.

OUSOURI, a town of Chineſe Tartary; 67 miles SSW. of Tonkon.

OUSSON, a town of France, in the department of the Loiret; 8 miles SE. of Gien.

OUSSOUR. See OUSOOR.

(1.) OUST, a river of France, which runs into the Vilaine, near Redon.

(2.) OUST, a town of France, in the department of Arriege; 74 miles S. of St Girons.

* *To* OUST. *v. a.* [*ouſter*, *ôter*, French.] 1. To vacate; to take away.—Multiplication of actions upon the caſe were rare formerly, and therefore by wager of law *ouſted*. *Hale.* 2. To deprive; to eject.—Though the deprived biſhops and clergy went out upon account of the oaths, yet this made no ſchiſm. No not even when they were actually deprived and *ouſted* by act of parliament. *Leſley.*

OUSTAD, a town of Norway, in Chriſtianſand; 32 miles W. of Chriſtianſand.

(1.) OUSTER. *n. ſ.* or DISPOSSESSION, in law, an injury which carries with it the amotion of poſſeſſion; for by means of it the wrong doer gets into the actual poſſeſſion of the land or hereditament, and obliges him that hath a right to ſeek a legal remedy, in order to gain poſſeſſion, together with damages. This ouſter may either be of the freehold by abatement, intruſion, diſſeiſin, diſcontinuance, and deforcement; or of chattels real, as an eſtate by ſtatute-merchant, ſtatute-ſtaple, or elegit, or an eſtate for years.

(2.) OUSTER LE MAIN, *amovere manum*, in law, denotes a livery of lands out of the king's hands; or a judgment given for him that traverſed, or ſued, a *monſtrans le droit*. When it appeared, upon the matter being diſcuſſed, that the king had no right or title to the land ſeized, judgment was given in chancery, that the king's hand be amoved; and *ouſter le main*, or *amoveas manum*, was therefore awarded to the eſcheater, to reſtore the land, &c. All wardſhips, liveries, *ouſter le mains*, &c. are now taken away and diſcharged by ſtat. 12. Car. II.

(1.) OUSTIOUG, a province of the Ruſſian empire, bounded on the N. by Dwina, E. by the foreſt of Zirani, S. by Wologda, and W. by Cargapol and Waga. It is divided into two parts by the Suchana; is full of foreſts; and the rivers yield plenty of fiſh, which the inhabitants dry in the ſun, and which make their principal food.

(2.) OUSTIOUG, the capital of the above province, with an archbiſhop's ſee and a caſtle; is ſeated on the river Suchan, over againſt the mouth of the Jug, in Lon. 43. 25. E. Lat. 61. 48. N.

(1.) * OUT. *adv.* [*ut*, Saxon; *uyt*, Dutch.] 1. Not within.—

The *out*, if Indian figures ſtain,
The inſide muſt be rich and plain. *Prior.*

2. It is generally oppoſed to *in*.—That blind raſcally boy, that abuſes every one's eyes becauſe his own are *out*, let him be judge how deep I am in love. *Shak.* 3. In a ſtate of diſcloſure.—Fruits and grains are half a year in concocting; whereas leaves are *out* and perfect in a month. *Bacon.* 4. Not in confinement or concealment.—

Let ſhame ſay what it will; when theſe are gone,
The woman will be *out*. *Shakeſpeare.*

5. From the place or houſe.—*Out* with the dog, ſays one; what cur is that! ſays another: whip him *out*, ſays the third. *Shak.* 6. From the inner part.—That they bear it not *out* into the outer court, to ſanctify the people. *Ezek.* xlvi. 20. 7. Not at home; as, when you called I was *out*. 8. In a ſtate of extinction.—

It was great in'rance, Gloſter's eyes being *out*,
To let him live; when he arrives he moves
All hearts.— *Shak. King Lear*

This candle burns not clear; 'tis I muſt ſnuff it;
Then *out* it goes. *Shak. Henry VIII.*

Think it

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Think'ſt thou the fiery fever will go *out*,
With titles blown from adulation? *Shakeſp.*
—Her candle goeth not *out* by night. *Prov.* xxxi. 18.
9. In a ſtate of being exhauſted.—When the butt is *out*, we will drink water, not a drop before; bear up and board them. *Shakeſpeare's Tempeſt.*—Large coals are properelt for dreſſing meat; and when they are *out*, if you happen to miſcarry in any diſh, lay the fault upon want of coals. *Swift.*
10. Not in employment; not in office.—

So we'll live and hear poor rogues
Talk of court news, and we'll talk with them too,
Who loſes, and who wins; who's in, who's *out*.
Shak.

11. Not in any ſport or party.—The knave will ſtick by thee: he will not *out*: he is true bred. *Shak. Henry* IV.—

I am not ſo as I ſhould be;
But I'll ne'er *out*. *Shak. Antony and Cleop.*

—I never was *out* at a mad frolick, though this is the maddeſt I ever undertook. *Dryden.* 12. To the end.—

Hear me *out*;
He reap'd no fruit of conqueſt, but theſe bleſſings. *Dryden.*
You have ſtill your happineſs in doubt,
Or elſe 'tis paſt, and you have dream'd it *out*.
Dryden.
The tale is long, nor have I heard it *out*;
Thy father knows it all. *Addiſon's Cato.*

13. Loudly; without reſtraint.—

At all I laugh, he laughs no doubt;
The only difference is, I dare laugh *out*. *Pope.*

14. Not in the hands of the owner.—If the laying of taxes upon commodities does affect the land that is *out* at rack rent, it is plain it does equally affect all the other land in England too. *Locke.*—Thoſe lands were *out* upon leaſes of four years. *Arbuth.* 15. In an errour.—

A muſician that will always play,
And yet is always *out* at the ſame note. *Roſcomm.*

—You are mightily *out* to take this for a token of eſteem, which is no other than a note of infamy. *L'Eſtrange.*—This I have noted for the uſe of thoſe who, I think, are much *out* in this point. *Kettlewell.*—According to Hobbe's compariſon of reaſoning with caſting up accounts, whoever finds a miſtake in the ſum total, muſt allow himſelf *out*, though after repeated trials he may not ſee in which article he has miſreckoned. *Swift.*
16. At a loſs; in a puzzle.—

Like a dull actor now;
I have forgot my part, and I am *out*,
Even to a full diſgrace. *Shak. Coriolanus.*

—This youth could make his own part, if at any time he chanced to be *out*. *Bacon's Henry* VII.
17. With torn cloaths. The parts being *out*, that is, not covered.—

Evidences ſwore;
Who hither coming *out* at heels and knees,
For this had titles. *Dryden.*

18. Away, ſo as to conſume.—They dreſs and comb *out* all their opportunities of morning devotion, and ſleep *out* the care for their ſouls. *Taylor.*
19. Deficient; as, *out* of pocket, noting loſs.—Upon the great Bible, he was *out* fifty pounds, and Grimburſt himſelf only by ſelling two copies. *Fell.*
20. It is uſed emphatically before *alas*.

Out alas! no ſea I find
Is troubled like a lover's mind. *Suckling.*

21. It is added emphatically to verbs of diſcovery.—If ye will not do ſo; be ſure your ſin will find you *out*. *Num.* xxxii. 23.

(2.) * OUT. *interject.* 1. An expreſſion of abhorrence or expulſion.—*Out* on thee, rude man! thou doſt ſhame thy mother. *Shak.*—*Out*, Varlet from my ſight. *Shak.*—*Out*, you mad-headed ape! a weazel hath not ſuch a deal of ſpleen. *Shak.*—

Out of my door, you witch! you hag!
Out, out, out. *Shak.*
Out, out, hyena; theſe are thy wonted arts,
To break all faith. *Milton.*

2. It has ſometimes *upon* after it.—

Out upon this half-fac'd fellowſhip. *Shak.*
Out upon it, I have lov'd
Three whole days together. *Suckling.*

(3.) * OUT, in compoſition, generally ſignifies ſomething beyond or more than another; but ſometimes it betokens emiſſion, excluſion, or ſomething external.

(4.) * OUT OF. *prep.* [*Of* ſeems to be the preposition, and *out* only to modify the ſenſe of *of*.]
From; noting produce.—

So many Neroes and Caligulas,
Out of theſe crooked ſhores muſt daily riſe.
Spenſer.

—Thoſe bards, coming many hundred years after, could not know what was done in former ages, nor deliver certainty of any thing, but what they feigned *out of* their own unlearned heads. *Spenſer.*—Alders and aſhes have been ſeen to grow out of ſteeples; but they manifeſtly grow *out of* clefts. *Bacon.*—Juices of fruits are watery and oily: among the watery are all the fruits *out of* which drink is expreſſed; as the grape, the apple, the pear, and cherry. *Bacon.*—He is ſofter than Ovid; he touches the paſſions more delicately, and performs all this *out of* his own fund. *Dryden.* 2. Not in; noting excluſion, diſmiſſion, abſence, or dereliction.—

The ſacred nymph
Was *out of* Dian's favour. *F. Queen.*
Guiltineſs
Will ſpeak, though tongues were *out of* uſe. *Shak.*
The path diſus'd was *out of* mind. *Dryden.*
My retreat the beſt companions grace,
Chiefs *out of* war, and ſtateſmen *out of* place.
Pope.
How does he fancy we can ſit,
To hear his *out of* faſhion wit? *Swift.*

—They are *out of* their element. *Baker.* 3. No longer in.—

Enjoy the preſent ſmiling hour,
And put it *out of* fortune's pow'r. *Dryden.*

4. Not in; noting unfitneſs.—He is witty *out of* ſeaſon. *Dryden.*—

Thou'lt ſay my paſſion's *out of* ſeaſon. *Addiſ.*

5. Not within; relating to a houſe.—Court holy water in a dry houſe, is better than the rain waters *out of* door. *Shak.* 6. From; noting copy.—St Paul quotes one of their poets for this ſaying, notwithſtanding T. G's cenſure of them *out of* Horace. *Stillingfleet.* 7. From; noting reſcue.—Chriſtianity recovered the law of nature *out of* all thoſe errors with which it was overgrown in the times of paganiſm. *Addiſon.* 8. Not in; noting exorbitance

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exorbitance or irregularity.—Why publiſh it at this juncture; and ſo, *out of* all method, apart and before the work? *Swift.*—Uſing old thread-bare phraſes, will often make you go *out of* your way to find and apply them. *Swift.* 9. From one thing to ſomething different.—He that looks on the eternal things, that are not ſeen, will be neither frighted nor flattered *out of* his duty. *Decay of Piety.*—Words are able to perſuade men *out of* what they find and feel. *South.* 10. To a different ſtate from; in a different ſtate.—

That noble and moſt ſovereign reaſon,
Like ſweet bells jangl'd *out of* tune and harſh.
Shak.

—When the mouth is *out of* taſte, it maketh things taſte ſometimes ſalt, chiefly bitter, and ſometimes loathſome, but never ſweet. *Bacon.*—By the ſame fatal blow, the earth fell *out of* that regular form wherein it was produced at firſt. *Burnet.*—

They all at once employ their thronging darts,
But *out of* order thrown, in air they join,
And multitude makes fruſtrate the deſign.
Dryden.

11. Not according to.—That there be an equality, ſo that no man acts or ſpeaks *out of* character. *Broome.* 12. To a different ſtate from; noting ſeparation.—Whoſoever doth meaſure by number muſt needs be greatly *out of* love with a thing that hath ſo many faults. *Hooker.*—If ridicule were employed to laugh men *out of* vice and folly, it might be of ſome uſe; but it is made uſe of to laugh men *out of* virtue and good ſenſe, by attacking every thing ſolemn and ſerious. *Spectator* 13. Beyond.—Amongſt thoſe things which have been received with great reaſon, ought that to be reckoned which the antient practice of the church hath continued time *out of* mind. *Hooker.*—

What, *out of* hearing gone? *Shak.*

—I have been an unlawful bawd, time *out of* mind. *Shak.*—Few had ſuſpicion of their intentions, till they were both *out of* diſtance to have their converſion attempted. *Clarendon.*—The power of France, with ſo great revenues, and ſuch application, will not encreaſe every year *out of* proportion to what ours will do. *Temple.*—When I am *out of* reach, he ſhall be releaſed. *Dryden.*—We ſee people lulled aſleep with ſolid and elaborate diſcourſes of piety, who would be tranſported *out of* themſelves by the bellowings of enthuſiaſm. *Addiſ.*—Milton's ſtory was tranſacted in regions that lie *out of* the reach of the ſun and the ſphere of the day. *Addiſon.*—Women weep and tremble at the ſight of a moving preacher, though he is placed quite *out of* their hearing. *Addiſon.*—The Supreme Being has made the beſt arguments for his own exiſtence, in the formation of the heavens and the earth, and which a man of ſenſe cannot forbear attending to, who is *out of* the noiſe of human affairs. *Addiſon.* 14. Deviating from; noting irregularity.—

Heaven defend! but ſtill I ſhould ſtand ſo,
So long as *out of* limit, and true rule,
You ſtand againſt anointed majeſty! *Shak.*

15. Paſt; without; noting ſomething worn out or exhauſted.—

I am *out of* breath.
—How art thou *out of* breath, when thou haſt breath,
To ſay to me that thou art *out of* breath? *Shak.*
—*Out of* hope to do any good, he directed his courſe of Corone. *Knolles.*—

He found himſelf left far behind,
Both *out of* heart and *out of* wind. *Hudibras.*

—I publiſhed ſome fables, which are *out of* print. *Arbuthnot.* 16. By means of.—*Out of* that will I cauſe thoſe of Cyprus to mutiny. *Shak.* 17. In conſequence of; noting the motive or reaſon.—She is perſuaded I will marry her, *out of* her own love and flattery, not *out of* my promiſe. *Shak.*—The pope, *out of* the care of an univerſal father, had in the conclave divers conſultations about an holy war againſt the Turk. *Bacon.*—

Not *out of* cunning, but a train
Of atoms juſtling in his brain. *Hudibras.*

—Cromwell accuſed the earl of Manchester, of having betrayed the parliament *out of* cowardice. *Clarendon.*—Thoſe that have recourſe to a new creation of waters, are ſuch as do it *out of* lazineſs and ignorance, or ſuch as do it *out of* neceſſity. *Burnet.*—Diſtinguiſh betwixt thoſe that take ſtate upon them, purely *out of* pride and humour, and thoſe that do the ſame in compliance with the neceſſity of their affairs. *L'Eſtrange.*—Make them conformable to laws, not only for wrath and *out of* fear of the magiſtrate's power, which is but a weak principle of obedience; but *out of* conſcience, which is a firm and laſting principle. *Tillotſon.*—What they do not grant *out of* the generoſity of their nature, they may grant *out of* mere impatience. *Smallridge.*—Our ſucceſſes have been the conſequences of a neceſſary war; in which we engaged, not *out of* ambition, but for the defence of all that was dear to us. *Atterbury.* 18. *Out of hand;* immediately; as that is eaſily uſed which is ready in the hand.—

He bade to open wide his brazen gate,
Which long time had been ſhut, and *out of hand,*
Proclaimed joy and peace through all his ſtate.
Spenſer.

No more ado,
But gather we our forces *out of hand.* *Shak.*

(5.) OUTS. *n. ſ. plur.* In Britiſh politics, a common expreſſion for perſons out of place, and un-penſioned; oppoſed to the INS, or thoſe in office or adminiſtration. It is only uſed in the plural.

* *To* OUT. *v. a.* To deprive by expulſion.—The members of both houſes who withdrew, were counted deſerters, and *outed* of their places in parliament. *K. Charles.*—The French having been *outed* of their holds. *Heylyn.*—So many of their orders, as were *outed* from their fat poſſeſſions, would endeavour a re-entrance againſt thoſe whom they accounted heretics. *Dryden.*

* *To* OUTACT. *v. a.* [*out* and *act.*] To do beyond.—

He that made me heir to treaſures,
Would make me *out-act* a real widow's whining. *Otway.*

OU-TAI, a town of China, in Chan-ſi.

OU-TAM, a town of China, in Pe-tche-li.

OUTARD BAY, a bay of Canada, on the N. ſide of the river St Lawrence.

* *To*

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* *To* OUTBALANCE. *v. a.* [*out* and *balance.*] To over-weigh; to preponderate.—

Let dull Ajax bear away my right,
When all his days *outbalance* this one night.
Dryden.

* *To* OUTBAR. *v. a.* [*out* and *bar.*] To shut out by fortification.—

These to *outbar* with painful poinings,
From sea to sea he heap'd a mighty mound.
Spenser.

* *To* OUTBID. *v. a.* [*out* and *bid.*] To overpower by bidding a higher price.—

If in thy heart
New love created be by other men,
Which have their stocks entire, and, can in tears,
In sighs, in oaths, in letters, *outbid* me,
This new love may beget new fears. *Donne.*
For Indian spices, for Peruvian gold,
Prevent the greedy, and *outbid* the bold. *Pope.*

* OUTBIDDER. *n. s.* [*out* and *bid.*] One that outbids.

* OUTBLOWED. *adj.* [*out* and *blow.*] Inflated; swollen with wind.—

At their roots grew floating palaces,
Whose *outblown* bellies cut the yielding seas.
Dryden.

* OUTBORN. *adj.* [*out* and *born.*] Foreign; not native.

* OUTBOUND. *adj.* [*out* and *bound.*] Destinated to a distant voyage; not coming home.—

Triumphant flames upon the water float,
And *outbound* ships at home their voyage end.
Dryden.

* *To* OUTBRAVE. *v. a.* [*out* and *brave.*] To bear down and defeat by more daring, insolent, or splendid appearance.—

I would out-stare the sternest eyes that look,
Outbrave the heart most daring on the earth,
To win thee, lady. *Shak.*
Here Sodom's tow'rs raise their proud tops on high,
The tow'rs, as well as men, *outbrave* the sky.
Cowley.

—We see the danger, and by fits take up some faint resolution to *outbrave* and break through it. *L'Estrange.*

* *To* OUTBRAZEN. *v. a.* [*out* and *brazen.*] To bear down with impudence.

* OUTBREAK. *n. s.* [*out* and *break.*] That which breaks forth; eruption.—

The flash and *outbreak* of a fiery mind. *Shak.*

* *To* OUTBREATHE. *v. a.* [*out* and *breath.*] 1. To weary by having better breath.—

Rendering faint quittance, wearied and *outbreath'd*,
To Henry Monmouth. *Shak.*

2. To expire.—

That sign of last *outbreathed* life did seem.
Spenser.

(1.) * OUTCAST. *part.* [*out* and *cast.* It may be observed, that both the participle and the noun are indifferently accented on either syllable. It seems most analogous to accent the participle on the last, and the noun on the first.] 1. Thrown into the air as refuse, as unworthy of notice.—

Abandon'd soon, I read the caitive spoil
Of that same *outcast* carcase. *Spenser.*

2. Banished; expelled.—

Behold, instead
Of us *outcast*, exil'd, his new delight
Mankind created. *Milton.*

(2.) * OUTCAST. *n. s.* Exile; one rejected; one expelled.—

As Ovid, be an *outcast* quite abjur'd, *Shak.*
O blood-bespotted Neapolitan,
Outcast of Naples! *Shak.*
For me, *outcast* of human race,
Love's anger only waits. *Prior.*
He dies sad *outcast* of each church and state!
And harder still, flagitious. *Pope.*

OU-TCHANG, a city of China, of the first rank, in the province of Hou-quang, on the Yang-tse; 582 miles S. of Peking. Lon. 131. 36. E. Ferro. Lat. 30. 36. N.

(1.) OU-TCHEOU, a city of China, of the first rank, in Quang-si, near the province of Quang-tong. All the rivers of the province unite near it, which renders it the key of the province, and the most considerable city in it for trade. Its jurisdiction comprehends one town of the second rank, and nine of the third. The country is partly mountainous, wherein are found cinnabar, and the uncommon tree called QUANGLANG. (See that article.) Lon. 128. 18. E. Ferro. Lat. 23. 28. N.

(2.) OU-TCHEOU, a town of China, of the third rank, in Koei-tcheou, 20 miles N. of Senan.

OU-TCHUEN, a river of Thibet, which runs into the Sanpoo.

OU-TCHUEN, a sea-port of China, in Quang-tong, of the third rank; 20 miles SSE. of Hoa.

To OUT-COMPLY. *v. n.* To excel in compliance *Butler's Hudibras.* See *To* OUTFAWN.

* *To* OUTCRAFT. *v. a.* [*out* and *craft.*] To excel in cunning.—

Italy hath *outcrafted* him,
And he's at some hard point. *Shak.*

* OUTCRY. *n. s.* [*out* and *cry.*] 1. Cry of vehemence; cry of distress; clamour.—These *outcries* the magistrates there shun. *Spenser on Ireland.*—

So strange thy *outcry*, and thy words so strange
Thou interposest. *Milton.*
I make my way,
Where noises, tumults, *outcries*, and alarms
I heard. *Denham.*

2. Clamour of detestation.—There is not any one vice, incident to the mind of man, against which the world has raised such a loud and universal *outcry*, as against ingratitude. *South.* 3. A public sale; an auction. *Ainsw.*

* *To* OUTDARE. *v. a.* [*out* and *dare.*] To venture beyond.—

Myself, my brother, and his son,
That brought you home, and boldly did *outdare*
The dangers of the time. *Shak.*

* *To* OUTDATE. *v. a.* [*out* and *date.*] To antiquate.—Works and deeds of the law, in those places, signify legal obedience, or circumcision, and the like judicial *outdated* ceremonies. *Ham.*

* *To* OUTDO. *v. a.* [*out* and *do.*] To excel; to surpass; to perform beyond another.—He hath in this action *outdone* his former deeds doubly. *Shak.*

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Our greateſt ladies love to ſee their ſcorn
Outdone by thine, in what themſelves have worn.
Waller.

Heav'nly love ſhall *outdo* helliſh fate. *Milton.*

Here let thoſe who boaſt in mortal things,
Learn how their greateſt monuments of fame,
And ſtrength, and art, are eaſily *outdone*
By ſpirits reprobate. *Milton.*

—An impoſtor *outdoes* the original. *L'Eſtrange.*

Thou haſt this day thy father's youth *outdone.* *Dryden.*

Generous rage,
To ſee the glories of my youthful age
So far *outdone.* *Dryden.*

—The boy's mother, deſpiſed for not having read a ſyſtem of logick, *outdoes* him in it. *Locke.*—

I grieve to be *outdone* by Gay,
In my own humourous biting way. *Swift.*

* *To* OUTDWELL. *v. a.* [*out* and *dwell.*] To ſtay beyond.—

He *outdwells* his hour. *Shak.*

OUTEIRO, a town and fort of Portugal, in Traloſ-Montes, ſeated on a mountain, nine miles SE. of Braganza, and 21 NW. of Miranda de Duero.

* OUTER. *adj.* [from *out.*] That which is without; oppoſed to *inner.*—The kidney is a conglomerated gland only in the *outer* part. *Grew's Coſmol.*

* OUTERLY. *adv.* [from *outer.*] Towards the outſide.—In the lower jaw, two tuſks like thoſe of a boar, ſtanding *outerly*, an inch behind the cutters. *Grew's Muſæum.*

* OUTERMOST. *adj.* [ſuperlative, from *outer.*] Remoteſt from the midſt.—Try if three bells were made one within another, and air betwixt each; and the *outermoſt* bell were chimed with a hammer, how the ſound would differ from a ſingle bell. *Bacon.*—The *outermoſt* corpuſcles of a white body, have their various little ſurfaces of a ſpecular nature. *Boyle.*—Many handſome contrivances of draw-bridges I had ſeen, ſometimes many upon one bridge, ſometimes two or three on a breaſt, the *outermoſt* ones ſerving for the retreat of the foot, and the middle for the horſe and carriages. *Brown.*

* *To* OUTFACE. *v. a.* [*out* and *face.*] 1. To brave; to bear down by ſhew of magnanimity; to bear down with impudence.—

We'll *outface* them and out-ſwear them too. *Shak.*

Doſt thou come hither
To *outface* me with leaping in her grave? *Shak.*

Threaten the threatener, and *outface* the brow
Of bragging horror. *Shak.*

—They betrayed ſome knowledge of their perſons, but were *outfaced.* *Wotton.* 2. To ſtare down.—We behold the ſun and enjoy his light, as long as we look towards it circumſpectly; we warm ourſelves ſafely while we ſtand near the fire; but if we ſeek to *outface* the one, to enter into the other, we forthwith become blind or burnt. *Raleigh.*

* *To* OUTFAWN. *v. a.* [*out* and *fawn.*] To excel in fawning.—

They receive as little by,
Outfawn as much and out-comply. *Hudibras.*

* *To* OUTFLY. *v. a.* [*out* and *fly.*] To leave behind in flight.—

His evaſion wing'd thus ſwift with ſcorn,
Cannot *outfly* our apprehenſions. *Shak.*

Horoſcope's great ſoul,
Rais'd on the pinions of the bounding wind,
Outflew the rack, and left the hours behind.
Garth.

* OUTFORM. *n. ſ.* [*out* and *form.*] External appearance.—

Cupid, who took vain-delight
In mere *outforms*, until he loſt his ſight,
Hath chang'd his ſoul. *Ben Jonſon.*

* *To* OUTFROWN. *v. a.* [*out* and *frown.*] To frown down; to over-bear by frowns.—

For thee, oppreſſed king, am I caſt down;
Myſelf could elſe *outfrown* falſe fortune's frown.
Shak.

* OUTGATE. *n. ſ.* [*out* and *gate.*] Outlet; paſſage outwards.—Thoſe places are fit for trade, having moſt convenient *out-gates* by divers ways to the ſea, and in-gates to the richeſt parts of the land. *Spenſer.*

* *To* OUTGIVE. *v. a.* [*out* and *give.*] To ſurpaſs in giving.—

The bounteous play'r *outgave* the pinching lord. *Dryden.*

* *To* OUTGO. *v. a.* pret. *outwent*; part. *outgone*; [*out* and *go.*] 1. To ſurpaſs; to excel.—For frank, well ordered, and continual hoſpitality, he *out-went* all ſhew of competence. *Carew.*—While you practiſed the rudiments of war, you *out-went* all other captains. *Dryden.*—Where they apply themſelves, none of their neighbours *out-go* them. *Locke.* 2. To go beyond; to leave behind in going.—Many ran afoot thither out of all cities, and *out-went* them. *Mark* vi. 33. 3. To circumvent; to over-reach.—

Molleſſon
Thought us to have *out-gone*
With a quaint invention. *Denham.*

* *To* OUTGROW. *v, a.* [*out* and *grow.*] To ſurpaſs in growth; to grow too great or too old for any thing.—

Much their work *outgrew*,
The hands diſpatch of two, gard'ning ſo wide.
Milton.

When ſome virtue much *outgrows* the reſt,
It ſhoots too faſt and high. *Dryden.*

—The graver geniuſes, who have *outgrown* all gaieties of ſtyle and youthful reliſhes. *Glanville.*—The lawyer, the tradeſman, the mechanic, have found ſo many arts to deceive, that they far *outgrow* the common prudence of mankind. *Swift.*

* OUTGUARD. *n. ſ.* [*out* and *guard.*] One poſted at a diſtance from the main body, as a defence.—As ſoon as any foreign object preſſes upon the ſenſe, thoſe ſpirits which are poſted upon the *out-guards*, immediately ſcour off to the brain. *South.*

You beat the *out guards* of my maſter's hoſt.
Dryden.

Theſe *out-guards* of the mind are ſent abroad.
Blackmore.

* *To* OUTJEST. *v. a.* [*out* and *jeſt.*] To overpower by jeſting.—

The fool labours to *outjeſt*
His heart-ſtruck injuries. *Shak.*

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OUTIMACS, a nation of North American Indians, who reſide in the North-Weſtern Territory, between lake Michigan and St Clare. They have 200 warriors.

OU-TING, a city of China, of the firſt rank, in the province of Yun-nan. Lon. 119. 52. E. Ferro. Lat. 25. 53. N.

* *To* OUTKNAVE. *v. a.* [*out* and *knave.*] To ſurpaſs in knavery.—The world calls it out-witting a man, when he's only *outknaved. L'Eſtrange.*

* OUTLANDISH. *adj.* [*out* and *land.*] Not native; foreign.—

Perchance *outlandiſh* ground
Bears no more wit than ours. *Donne.*
So many hollow compliments and lies,
Outlandiſh flatteries. *Milton.*

—Upon the approach of the king's troops under general Wills, who was uſed to the *outlandiſh* way of making war, we put in practice paſſive obedience. *Addiſon.*

OUTLAR, a town of Ireland, in Wexford.

* *To* OUTLAST. *v. a.* [*out* and *laſt.*] To ſurpaſs in duration.—Good houſewives, to make their candles burn the longer, lay them in bran, which makes them harder; inſomuch as they will *outlaſt* other candles of the ſame ſtuff, half in half. *Bacon.*—

Summer's chief honour, if thou hadſt *outlaſted*
Bleak winter's force that made thy bloſſoms dry. *Milton.*

—The preſent age hath attempted perpetual motions, whoſe revolutions might *outlaſt* the exemplary mobility, and out-meaſure time itſelf. *Brown.*—

This with the fabric of the world begun,
Elder than light, and ſhall *outlaſt* the ſun.
Waller.

* OUTLAW. *n. ſ.* [*utlaga*, Saxon.] One excluded from the benefit of the law. A robber; a bandit.—

An *outlaw* in a caſtle keeps. *Shak.*

—Gathering unto him all the ſcatterlings and *outlaws* out of the woods and mountains. *Spenſer.*—How ſhould they be other than *outlaws* and enemies to the crown of England? *Davies.*—

You may as well ſpread out the unſun'd heaps
Of Miſer's treaſure by an *outlaw's* den,
And tell me it is ſafe, as bid me hope
Danger will let a helpleſs maiden paſs. *Milton.*

—A drunkard is *outlawed* from all worthy and creditable converſe. *South.*

* *To* OUTLAW. *v. a.* To deprive of the benefits and protection of the law.—

I had a ſon,
Now *out-lawed* from my blood; he ſought my life. *Shak.*
He that is drunken,
Is *outlawed* by himſelf. *Herbert.*

—Like as there are particular perſons *outlawed* and proſcribed by civil laws, ſo are there nations that are *outlawed* and proſcribed by the law of nature and nations. *Bacon.*—Like an *outlawed* perſon he is expoſed to all that will aſſault him. *Decay of Piety.*

(1.) * OUTLAWRY. [from *outlaw.*] A decree by which any man is cut off from the community, and deprived of the protection of the law.—

By proſcription and bills of *outlawry*,
Octavius, Antony, and Lepidus,
Have put to death an hundred ſenators. *Shak.*

—Divers were returned knights and burgeſſes for the parliament; many of which had been by Richard III. attainted by *outlawries. Bacon.*

(2.) OUTLAWRY is the puniſhment of a perſon who, being called into law, and lawfully, according to the uſual forms, ſought, does contemptuouſly refuſe to appear. The effect of being outlawed at the ſuit of another, in a civil cauſe, is the forfeiture of all the perſon's goods and chattels to the king, and the profits of his land, while the outlawry remains in force. If in treaſon or felony, all the lands and tenements which he has in fee, or for life, and all his goods and chattels, are alſo forfeited; and, beſides, the law interprets his abſence as a ſufficient evidence of guilt; and, without requiring farther proof, accounts the perſon guilty of the fact; on which enſues corruption of blood, &c. However, to avoid inhumanity, no man is entitled to kill him wantonly or wilfully; but in ſo doing he is guilty of murder, unleſs it happens in endeavouring to apprehend him; for any body may arreſt an outlaw, either of his own head, or by writ or warrant of *capias utlagatum*, in order to bring him to execution. If, after outlawry in civil caſes, the defendant publicly appear, he is to be arreſted by a writ of *capias utlagatum*, and committed till the outlawry be reverſed; which reverſal may be had by the defendant's appearing in court, (and in the king's bench by ſending an attorney, according to ſtat. 4 and 5 W. and M. cap. 18.), and any plauſible circumſtance, however trifling, is in general ſufficient to reverſe it; it being conſidered only as a proceſs to force appearance. The defendant muſt, however, pay full coſts, and muſt put the plaintiff in the ſame condition as if he had appeared before the writ of *exigi facias* was awarded. It is appointed by magna charta, that no freeman ſhall be outlawed, but according to the law of the land. A minor or a woman cannot be outlawed. In Scotland, outlawry anciently took place in the caſe of refuſal to fulfil a civil obligation, as well as in criminal caſes. At preſent, however, it only takes place in the two caſes of flying from a criminal proſecution, and of appearing in court attended by too great a number of followers. But the defender, upon appearing at any diſtance of time, and offering to ſtand trial, is entitled, *de jure*, to have the outlawry reverſed, and to be admitted to trial accordingly, and even to bail, if the offence be bailable. See WAIVE.

* OUTLEAP. *n. ſ.* [from the verb.] Sally; flight; eſcape.—Since youth muſt have, ſome liberty, ſome *outleaps*, they might be under the eye of a father. *Locke.*

* *To* OUTLEAP. *v. a.* [*out* and *leap.*] To paſs by leaping; to ſtart beyond.

* OUTLET. *n. ſ.* [*out* and *let.*] Paſſage outwards; diſcharge outwards; egreſs; paſſage of egreſs.—Colonies and foreign plantations are very neceſſary, as *outlets* to a populous nation.

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Bacon.—The enemy was deprived of that useful *outlet Clarendon.*—

So 'scapes th' insulting fire his narrow jail,
And makes small *outlets* into open air. *Dryden.*

—Have a care that these members be neither the inlets nor *outlets* of any vices. *Ray.*

* OUTLINE. *n. s.* [*out* and *line.*] Contour; line by which any figure is defined; extremity.—Painters, by their *outlines*, colours, lights, and shadows, represent the same in their pictures. *Dryden.*

* *To* OUTLIVE. *v. a.* [*out* and *live.*] To live beyond; to survive.—

With these mossed trees,
That have *outliv'd* the eagle. *Shak.*

Then there is hopes a great man's memory
May *outlive* his life half a year. *Soak.*

He that *outlives* this day, and comes safe home,
Will stand a-tiptoe when this day is nam'd. *Shak.*

—His courage was so signal that day, that too much could not be expected from it, if he had *outlived* it. *Clarendon.*—

Thou must *outlive*
Thy youth, thy strength, thy beauty. *Milton.*

Time, which made them their fame *outlive*,
To Cowley scarce did ripeness give. *Denham.*

—The soldier grows less apprehensive, by computing upon the disproportion of those that *outlive* a battle, to those that fall in it. *L'Estrange.*—

They live too long who happiness *outlive*. *Dryden.*

—Where noble families are gone to decay, their titles *outlive* their estates. *Swift.*—Pray *outlive* me, and then die as soon as you please. *Swift.*—

Two bacon flitches made his Sunday's chear;
Some the poor had, and some *outliv'd* the year. *Harte.*

* OUTLIVER. *n. s.* [*out* and *live.*] A survivor.

* *To* OUTLOOK. *v. a.* [*out* and *look.*] To face down; to browbeat.—

To *outlook* conquest and to win renown,
Even in the jaws of danger and of death *Shak.*

* *To* OUTLUSTRE. *v. a.* [*out* and *lustre.*] To excel in brightness.—She went before others I have seen, as that diamond of yours *outlustres* many I have beheld. *Shak.*

* OUTLYING. *part. adj.* [*out* and *lie.*] Not in the common course of order. Removed from the general scheme.—The last survey I proposed of the four *out-lying* empires, was that of the Arabians. *Temple.*—We have taken all the *out-lying* parts of the Spanish monarchy. *Addison.*

* *To* OUTMARCH. *v. a.* [*out* and *march.*] To leave behind in the march.—The horse *out-marched* the foot, which, by reason of the heat, was not able to use great expedition. *Clarendon.*

* *To* OUTMEASURE. *v. a.* [*out* and *measure.*] To exceed in measure.—Those revolutions might outlast the exemplary mobility, and *out-measure* time itself. *Brown.*

* OUTMOST. *adj.* [*out* and *most.*] Remotest from the middle.—

Chaos retir'd,
As from her *outmost* works, a broken foe. *Milt.*

—If any man suppose that it is not reflected by the air, but by the *outmost* superficial parts of the glass, there is still the same difficulty. *Newton.*—The generality of men are readier to fetch a reason from the immense distance of the starry heavens, and the *outmost* walls of the world. *Bentley.*

* *To* OUTNUMBER. *v. a.* [*out* and *number.*] To exceed in number.—The ladies came in so great a body to the opera, that they *outnumbered* the enemy. *Addison.*

* *To* OUTPACE. *v. a.* [*out* and *pace.*] To outgo; to leave behind.—

Orion's speed
Could not *outpace* thee. *Chapman.*

* OUTPARISH. *n. s.* [*out* and *parish.*] Parish not lying within the walls.—In the greater *outparishes* many of the poorer parishioners, through neglect, do perish for want of some heedful eye to overlook them. *Graunt.*

* OUTPART. *n. s.* [*out* and *part.*] Part remote from the centre or main body.—He is appointed to supply the bishop's jurisdiction and other judicial offices in the *outparts* of his diocese *Ayliffe.*

OUT PENSIONER, *n. s.* an old invalid soldier, who receives the annual pension, but is not obliged to reside in the hospital at Chelsea. Of these there are above 10,000. See CHELSEA.

OUTPOSTS, *n. s.* in a military sense, a body of men posted beyond the grand guard; called *outposts*, as being the rounds or limits of the camp.

* *To* OUTPOUR. *v. a.* [*out* and *pour.*] To emit; to send forth in a stream.—

He looked and saw what number numberless
The city gates *out-pour'd*. *Milton.*

* *To* OUTPRIZE. *v. a.* [*out* and *prize.*] To exceed in the value set upon it.—Either your unparagon'd mistress is dead, or she's *outprized* by a trifle. *Shak.*

* OUTRAGE. *n. s.* [*outrage*, French.] 1. Open violence; tumultuous mischief.—He wrought great *outrages*, wasting all the country where he went. *Spenser.*—

He doth himself in secret shrowd,
To fly the vengeance for his *outrage* due. *Spenser.*

In that beastly fury,
He has been known to commit *outrage*
And cherish factions. *Shak.*

Uncharitably with me have you dealt,
And shamefully my hopes by you are butcher'd;
My charity is *outrage*. *Shak.*

2. This word seems to be used by *Philips* for mere commotion, without any ill import, contrary to the universal use of writers.—

See with what *outrage* from the frosty north,
The early valiant Swede draws forth his wings
In battalious array. *Philips.*

(1.) * *To* OUTRAGE. *v. a.* [*outrager*, French.] To injure violently or contumeliously; to insult roughly and tumultuously.—

Ah heavens! that do this hideous act behold,
And heavenly virgin thus *outraged* see;
How can the vengeance just so long withhold! *Spenser.*

—The news put divers young bloods into such a fury, as the English ambassadors were not with-

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out peril to be *outraged*. *Bacon*.—Baſe and inſolent minds *outrage* men, when they have hopes of doing it without a return. *Atterbury*.—This interview *outrages* all decency. *Broome*.

(2) * *To* OUTRAGE. *v. n.* To commit exorbitancies. Not in uſe. Three or four great ones in court will *outrage* in apparel, huge hoſe, monſtrous hats, and gariſh colours. *Aſcham*.

* OUTRAGIOUS. *adj.* [*outrageux*, French.] It ſhould, I think, be written *outrageous*; but the cuſtom ſeems otherwiſe. 1. Violent; furious; raging; exorbitant; tumultuous; turbulent.—Under him they committed divers the moſt *outragious* villanies, that a baſe multitude can imagine. *Sidney*.

As ſhe went, her tongue did walk
In foul reproach and terms of vile deſpight,
Provoking him by her *outragious* talk. *Spenſer*.

They view'd the vaſt immeaſurable abyſs,
Outragious as a ſea, dark, waſteful, wild. *Milt*.

When he knew his rival freed and gone,
He ſwells with wrath; he makes *outragious* moan. *Dryden*.

2. Exceſſive; paſſing reaſon or decency.—My characters of Antony and Cleopatra, though they are favourable to them, have nothing of *outragious* panegyrick. *Dryden*. 3. Enormous; atrocious.—

Think not, although in writing I prefer'd
The manner of thy vile *outragious* crimes,
That therefore I have forg'd. *Shak*.

* OUTRAGIOUSLY. *adv.* [from *outragious*.] Violently; tumultuouſly; furiouſly.—That people will have colour of employment given them, by which they will poll and ſpoil ſo *outragiouſly*, as the very enemy cannot do worſe. *Spenſer*.—Let luſt burn never ſo *outragiouſly* for the preſent, yet age will in time chill thoſe heats. *South*.

* OUTRAGIOUSNESS. *n. ſ.* [from *outragicus*.] Fury; violence.—Virgil, more diſcreet than Homer, has contented himſelf with the partiality of his deities, without bringing them to the *outragiouſneſs* of blows. *Dryden*.

OUTRE. *adj.* [Fr. *above*, or *over and above*.] Beyond common; excentric; or out of the uſual mode: generally applied to ſomething abſurd or ridiculous in character or manners.

* *To* OUTREACH. *v. a.* [*out* and *reach*.] To go beyond.—This uſage is derived from ſo many deſcents of ages, that the cauſe and author *outreach* remembrance. *Carew*.—Our forefathers could never dream ſo high a crime as parricide, whereas this *outreaches* that fact. *Brown*.

OUTREDROOG, a fortreſs of Indoſtan, in Myſore, 12 miles from Saverndroog. It was taken by the Britiſh under Earl Cornwallis, on the 4th Dec. 1791. See INDIA, § 28.

* *To* OUTRIDE. *v. a.* [*out* and *ride*.] To paſs by riding.—

This advantage age from youth hath won,
As not to be *outridden*, though out-run. *Dryd*.

* OUTRIDER. *n. ſ.* [from *out* and *rider*.] A ſummoner whoſe office is to cite men before the ſheriff. *Dict*.

* OUTRIGHT. *adv.* [*out* and *right*.] 1. Immediately; without delay.—When theſe wretches had the ropes about their necks, the firſt was to be pardoned, the laſt hanged *outright*. *Arbuthnot*. 2. Completely.—

He neigh'd *outright*, and all the ſteed expreſs. *Addiſon*.

* *To* OUTROAR. *v. a.* [*out* and *roar*.] To exceed in roaring.—

O that I were
Upon the hill of Baſan, to *outroar*
The horned herd! *Shak*.

* OUTRODE. *n. ſ.* [*out* and *rode*.] Excurſion.—He ſet horſemen and footmen, to the end that, iſſuing out, they might make *outrodes* upon the ways of Judea. 1 *Mac*. xv. 41.

* *To* OUTROOT. *v. a.* [*out* and *root*.] To extirpate; to eradicate —

Pernicious diſcord ſeems
Outrooted from our more than iron age. *Rowe's Amb. Step-mother*.

* *To* OUTRUN. *v. a.* [*out* and *run*.] 1. To leave behind in running.—

It will *outrun* you, father, in the end. *Shak*.

The expedition of my violent love
Outruns the pauſer reaſon. *Shak*.

We may *outrun*,
By violent ſwiftneſs, that which we run at. *Shak*.

—Like the motion of a bullet in the air, which flieth ſo ſwift as it *outruns* the eye. *Bacon*.—

This advantage age from youth hath won,
As not to be out-ridden, though *outrun*. *Dryd*.

2. To exceed.—We *outrun* the preſent income, as not doubting to reimburſe ourſelves out of the profits of ſome future project. *Addiſon*.

* *To* OUTSAIL. *v. a.* [*out* and *ſail*] To leave behind in ſailing.—The word ſignifies a ſhip that *outſails* other ſhips. *Broome*.

* OUTSCAPE. *n. ſ.* [*out* and *ſcape*.] Power of eſcaping.—

It paſt
Our powers to lift aſide a log ſo vaſt,
As barr'd all *outſcape*. *Chapman*.

* *To* OUTSCORN. *v. a.* [*out* and *ſcorn*.] To bear down or confront by contempt; to deſpiſe; not to mind.—

He ſtrives in his little world of man t' *outſcorn*
The to and fro conflicting wind and rain. *Shak*.

* *To* OUTSELL. *v. a.* [*out* and *ſell*.] 1. To exceed in the price for which a thing is ſold; to ſell at a higher rate than another.—It would ſoon improve to ſuch a height, as to *outſell* our neighbours. *Temple*. 2. To gain an higher price.—

Her pretty action did *outſel* her gift,
And yet enrich'd it too. *Shak*.

* *To* OUTSHINE. *v. a.* [*out* and *ſhine*.] 1. To emit luſtre.—

Witneſs my ſon, now in the ſhade of death;
Whoſe bright *outſhining* beams thy cloudy wrath
Hath in eternal darkneſs folded up. *Shak*.

2. To excel in luſtre.—

By Shakeſpeare's, Johnſon's, Fletcher's lines,
Our ſtage's luſtre Rome's *outſhines*. *Denham*.

—Beauty and greatneſs are ſo eminently joined in your royal highneſs, that it were not eaſy for any but a poet to determine which of them *outſhines* the other. *Dryden*.—Homer does not only *outſhine* all other poets in the variety, but alſo in the novelty of his characters. *Addiſon*.—We ſhould ſee

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such as would *outshine* the rebellious part of their fellow-subjects, as much in their gallantry as in their cause. *Addison.*—Such accounts are a tribute due to the memory of those only who have *outshone* the rest of the world by their ranks as well as their virtues. *Atterbury.*—

Happy you!
Whose charms as far all other nymphs *outshine*,
As others gardens are excell'd by thine. *Pope.*

* *To* OUTSHOOT. *v. a.* [*out* and *shoot.*] 1. To exceed in shooting.—

The forward youth
Will learn t' *outshoot* you in your proper bow. *Dryden.*

2. To shoot beyond.—Men are resolved never to *outshoot* their forefathers mark; but write one after another. *Norris.*

* OUTSIDE. *n. s.* [*out* and *side.*] 1. Superficies; surface; external part.—What pity that so exquisite an *outside* of a head should not have one grain of sense in it. *L'Estrange.*—

The leathern *outside* boist'rous as it was,
Gave way and bent. *Dryden.*

2. Extreme part; part remote from the middle.—Hold an arrow in a flame for the space of ten pulses, and when it cometh forth, those parts which were on the *outsides* of the flame are blacked and turned into a coal. *Bacon.*—3. Superficial appearance.—

We're but the *outside* of the Roman Brutus,
Covering discretion with a coat of folly. *Shak.*

—The ornaments of conversation, and the *outside* of fashionable manners, will come in their due time. *Locke.*—Created beings see nothing but our *outside*. *Spectator.* 4. The utmost. A barbarous use.—Two hundred load upon an acre they reckon the *outside* of what is to be laid. *Mortimer.*—5. Person; external man.—

Fortune forbid, my *outside* have not charmed her. *Shak.*

—Your *outside* promiseth as much as can be expected from a gentleman. *Bacon.*—

What admir'st thou, what transports thee so?
An *outside?* fair, no doubt. *Milton.*

6. Outer side; part not inclosed.—I threw open the door of my chamber, and found the family standing on the *outside*. *Spectator.*

* *To* OUTSIT. *v. a.* [*out* and *sit.*] To sit beyond the time of any thing.—He that prolongs his meals and sacrifices his time, as well as his other conveniences, to his luxury, how quickly does he *outsit* his pleasure? *South.*

* *To* OUTSLEEP. *v. a.* [*out* and *sleep*] To sleep beyond.—

Lovers, to bed! 'tis almost fairy time:
I fear we shall *outsleep* the coming morn. *Shak.*

* *To* OUTSPEAK. *v. a.* [*out* and *speak.*] To speak something beyond; to exceed.—

Rich stuffs and ornaments of household
I find at such proud rate, that it *outspeaks*
possession of a subject. *Shak.*

* *To* OUTSPORT. *v. a.* [*out* and *sport.*] To sport beyond.—

Let's teach ourselves that honourable stop,
Not to *outsport* discretion. *Shak.*

* *To* OUTSPREAD. *v. a.* [*out* and *spread.*] To extend; to diffuse.—

With sails *outspread* we fly. *Pope.*

(1.) * *To* OUTSTAND. *v. a.* [*out* and *stand* 1. To support; to resist.—Each could demolish the other's work with ease enough, but not a man of them tolerably defend his own; which was sure never to *outstand* the first attack that was made. *Woodward.* 2. To stand beyond the proper time.—

I have *outstood* my time. *Shak.*

(2.) * *To* OUTSTAND. *v. n.* To protuberate from the main body.

* *To* OUTSTARE. *v. a.* [*out* and *stare.*] To face down; to brow-beat; to outface with effrontery.—

I would *outstare* the sternest eyes that look,
To win thee, lady. *Shak.*

These curtain'd windows, this self-prison'd eye,
Outstares the lids of large lookt tyranny.
Crashaw.

* OUTSTREET. *n. s.* [*out* and *street.*] Street in the extremities of a town.

* *To* OUTSTRETCH. *v. a.* [*out* and *stretch.*] To extend; to spread out.—

Make him stand upon the mole-hill,
That caught at mountains with *outstretch'd* arms. *Shak.*

Outstretch'd he lay on the cold ground, and oft
Curs'd his creation. *Milton.*

A spacious plain, *outstretch'd* in circuit wide,
Lay pleasant. *Milton.*

Does Theseus burn?
And must not she with *outstretch'd* arms receive him?
And with an equal ardour meet his vows? *Smith.*

* *To* OUTSTRIP. *v. a.* [This word *Skinner* derives from *out* and *spritzen*, to *spout*, German. I know not whether it might not have been originally *out-trip*, the *s* being afterward inserted] To outgo; to leave behind in a race.—

If thou wilt *out-strip* death, go cross the seas,
And live with Richmond from the reach of hell. *Shak.*

She will *out-strip* all praise,
And make it halt behind her. *Shak.*

Thou both their graces in thyself hast more
Outstript, than they did all that went before. *Ben Jonson.*

My soul, more earnestly release'd,
Will *out-strip* hers. *Donne.*

—A fox may be outwitted, and a hare *out-stript*. *L'Estrange.*—He got the start of them in point of obedience, and thereby *out-stript* them at length in point of knowledge. *South.*

With such array Harpalice bestrode
Her Thracian courser, and *out-stript* the rapid flood. *Dryden.*

* *To* OUTSWEAR. *v. a.* [*out* and *swear.*] To overpower by swearing.—

We shall have old swearing,
But we'll out-face them, and *out-swear* them too. *Shak.*

* *To* OUT SWEETEN. *v. a.* [*out* and *sweet. n.*] To excel in sweetness.—

The leaf of eglantine, which not to slander,
Out sweeten'd not thy breath. *Shak. Cymbeline.*

* *To* OUT-TALK. *v. a.* [*out* and *talk.*] To overpower

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power by talk.—This gentleman will *out-talk* us all. *Shak.*

* *To* OUT-TONGUE. *v. a.* [*out* and *tongue.*] To bear down by noise.—

My services which I have done the signory,
Shall *out-tongue* his complaints. *Shak. Othello.*

* *To* OUT-VALUE. *v. a.* [*out* and *value.*] To transcend in price.—He gives us in this life an earnest of expected joys, that *out-values* and transcends all those momentary pleasures it requires us to forsake. *Boyle.*

* *To* OUTVENOM. *v. a.* [*out* and *venom.*] To exceed in poison.

'Tis slander;
Whose edge is sharper than the sword, whose tongue
Out-venoms all the worms of Nile. *Shak. Cymbel.*

* *To* OUVIE. *v. a.* [*out* and *vie.*] To exceed; to surpass.—

For folded flocks, on fruitful plains,
Fair Britain all the world *outvies*. *Dryden.*

—One of these petty sovereigns will be still endeavouring to equal the pomp of greater princes, as well as to *out-vie* those of his own rank. *Addison.*

* *To* OUT-VILLAIN. *v. a.* [*out* and *villain.*] To exceed in villany.—He hath *out-villain'd* villany so far, that the rarity redeems him. *Shak. All's well.*

* *To* OUTVOICE. *v. a.* [*out* and *voice.*] To outroar; to exceed in clamour.—

The English beach
Pales in the flood with men, with wives and boys,
Whose shouts and claps *out-voice* the deep-mouth'd sea.

* *To* OUTVOTE. *v. a.* [*out* and *vote.*] To conquer by plurality of suffrages.—They were *outvoted* by other sects of philosophers. *South.*

* *To* OUTWALK. *v. a.* [*out* and *walk.*] To leave one in walking.

* OUTWALL. *n. f.* [*out* and *wall.*] 1. Outward part of a building. 2. Superficial appearance.—

For confirmation that I am much more
Than my *out-wall*, open this purse, and take
What it contains. *Shak. King Lear.*

(1.) * OUTWARD. *adj.* [*utward*, Saxon.] 1. Materially external. 2. External; opposed to *inward*: visible.—

If these shews be not *outward*, which of you
But is four Volscians? *Shak. Coriolanus.*
Oh what may man within him hide,
Though angel on the *outward* side! *Shak.*

—Repentance, not only *outward*, in the ministry of the word, but also inward, by the motions of the spirit. *Duty of Man.*—

He took a low'ring leave; but who can tell
What *outward* hate might inward love conceal?
Dryden.

3. Extrinsick; adventitious.—

Princes have their titles for their glories,
An *outward* honour for an inward toil. *Shak.*
Part in peace, and having mourn'd your sin
For *outward* Eden lost, find paradise within.
Dryden.

4. Foreign, not intestine.—It was intended to raise an *outward* war to join with some sedition within doors. *Hayward.* 5. Tending to the out-parts.—

The fire will force its *outward* way. *Dryden.* 6. [In theology.] Carnal; corporeal; not spiritual.—When the soul being inwardly moved to lift itself up by prayer, the *outward* man is surprized in some other posture; God will rather look to the inward motions of the mind, than to the *outward* form of the body. *Duppa.*—We may also pray against temporal punishments, that is, any *outward* affliction. *Duty of Man.*

(2.) * OUTWARD. *adv.* 1. To foreign parts: as, a ship *outward* bound. 2. To the outer parts.

(3.) OUTWARD. *n. f.* External form.—

I do not think
So fair an *outward*, and such stuff within,
Endows a man but him. *Shak. Cymbeline.*

* OUTWARDLY. *adv.* [from *outward.*] 1. Externally: opposed to *inwardly*.—That which inwardly each man should be, the church *outwardly* ought to testify. *Hooker.*—

However seeming *outwardly* content,
Yet th' inward touch their wounded honour bears. *Daniel.*

2. In appearance not sincerely.—Many wicked men are often touched with some inward reverence for that goodness which they cannot be persuaded to practise; nay, which they *outwardly* seem to despise. *Spratt.*

* OUTWARDS. *adv.* Towards the out-parts.—The light falling on them is not reflected *outwards*, but enters the bodies, and is often reflected and refracted within them, until it be stifled and lost. *Newton's Opticks.*

* *To* OUTWEAR. *v. a.* [*out* and *wear.*] 1. To pass tediously.—

By the stream, if I the night *out-wear*,
Thus spent already how shall nature bear
The dews descending and nocturnal air? *Pope.*

2. To last longer than something else.

* *To* OUTWEED. *v. a.* [*out* and *weed.*] To extirpate as a weed.—

Wrath is a fire, and jealousy a weed;
The sparks soon quench, the springing weed *out-weed*. *Spenser.*

* *To* OUTWEIGH. *v. a.* [*out* and *weigh.*] 1. To exceed in gravity.—That other super-added power whereby it is *out-weighed* and moved. *Wilkin's Mathematical Magic.* 2. To preponderate; to excel in value or influence.—

If any think brave death *out-weighs* bad life,
Let him express his disposition. *Shak. Coriol.*
All your care is for your prince I see,
Your truth to him *out weighs* your love to me.
Dryden.

—Whenever he finds the hardship of his slavery *out-weigh* the value of his life, it is in his power, by resisting the will of his master, to draw on himself the death he desires. *Locke.*—The marriage of the clergy is attended with the poverty of some of them, which is balanced and *out-weighed* by many single advantages. *Atterbury.*

* *To* OUTWELL. *v. n.* [*out* and *well.*] To pour out. Not in use.—

As when old father Nilus 'gins to swell,
With timely pride about the Ægyptian vale,
His fattie waves do fertile slime *out-well*,

And

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And overflow each plain and lowly dale.
Spenſer.

* *To* OUTWIT. *v. a.* [*out* and *wit*.] To cheat; to overcome by ſtratagem.—The world calls it *out-witting* a man, when he is only out-knaved. *L'Eſtrange.*—Juſtice forbids defrauding, or going beyond our brother in any manner, when we can over-reach and *out-wit* him. *Kettlewell.*—After the death of Craſſus, Pompey found himſelf *out-witted* by Cæſar. *Dryd.*—Nothing is more equal in juſtice, and indeed more natural in the direct conſequence of effects and cauſes, than for men wickedly wiſe to *out-wit* themſelves. *South.*

(1.) * OUTWORK, *n. ſ.* [*out* and *work*.] The parts of a fortification next the enemy.—Take care of our *out-works*, the navy royal, which are the walls of the kingdom. *Bacon.*—

Death hath taken in the *out-works*. *Denham.*

(2.) OUTWORKS, in fortification, are all thoſe works made without-ſide the ditch of a fortified place, to cover and defend it. See FORTIFICATION.

* OUTWORN. *part.* [from *out wear*.] Conſumed or deſtroyed by uſe.—

Inglorious, unemploy'd, with age *out-worn*.
Milton.

* *To* OUTWORTH, *v. a.* [*out* and *worth*. To excel in value.—

A beggar's book
Out-worths a noble's blood. *Shak.*

* *To* OUTWREST. *v. a.* [*out* and *wreſt*.] To extort by violence.—

The truth thereof I did *out-wreſt*. *Spenſer.*

* OUTWROUGHT. *part.* [*out* and *wrought*.] Outdone; exceeded in efficacy.—

The tall of torrents and the noiſe of tempeſts,
The boiling of Charybdis, the ſea's wildneſs,
The eating force of flames, and wings of winds,
Be all *out-wrought* by your tranſcendent furies.
B. Jonſon.

OUVILLE, a town of France, in the dep. of Lower Seine, 10½ miles S. of Cany; and 18 NNW. of Rouen.

(1.) OVUM. See EGG and OVOLO.

(2.) OVUM ANGUINUM. See ANGUINUM.

OUY, 3 towns of China, of the 3d rank; viz. one in Tche-kiang, and two in Peitche-li.

OUYATOISKA, a river of N. America, which falls into the Gulf of St Lawrence, and gives name to a bay at its mouth, W. of the Natachquoin.

OUZEL, *n. ſ.* a ſpecies of MOTACILLA.

OUZOUER, two towns of France; viz.

1. OUZOUER LE MARCHE, in the dep. of the Loir, and Cher; 12 miles N. of Mer, and 21 N. of Blois.

2. OUZOUER SUR CRESCE, in the dep. of the Loiret; 6 miles SE. of Gien, and 21 S. of Montargis.

OU, or AW, or LOCH-OW. See AW, N° 3.

OWANTY, a town of Lithuania, in Wilna.

OWASCO, a lake of New York, in Onondago county, 11 miles long and one broad. It extends through the townſhips of Aurelius and Scipio; and communicates with Lake Seneca on the N. by a river which runs through the townſhip of Brutus.

OWCZE, a town of Poland, in Podolia.

* *To* OWE. *v. a.* [*eg aa*, I *owe*, or I *ought*, Iſlandick.] 1. To be obliged to pay; to be indebted.—

I *owe* you much, and, like a witleſs youth,
That which I *owe* is loſt. *Shak.*
Let none ſeek needleſs cauſes to approve
The faith they *owe*. *Milton.*
—A ſon *owes* help and honour to his father. *Holyday.*—

You *owe* your Ormond nothing but a ſon.
Dryden.

Thou haſt deſerv'd more love than I can ſhow,
But 'tis thy fate to give, and mine to *owe*. *Dryd.*
—If, upon the general balance of trade, Engliſh merchants *owe* to foreigners L.100,000, if commodities do not, our money muſt go out to pay it. *Locke.* 2. To be obliged to aſcribe; to be obliged for.—

By me upheld, that he may know how frail
His fall'n condition is, and to me *owe*
All his deliv'rance, and to none but me. *Milt.*

3. To have from any thing as the conſequence of a cauſe.—

O deem thy fall not *ow'd* to man's decree.
Pope.

4. To poſſeſs; to be the right owner of. For *owe*, which is, in this ſenſe, obſolete, we now uſe *own*.—

Thou doſt here uſurp
The name thou *ow'ſt* not, and haſt put thyſelf
Upon this iſland as a ſpy. *Shak.*
Fate, ſhew thy force; ourſelves we do not *owe*;
What is decreed muſt be; and be this ſo. *Shak.*
Not poppy nor mandragora,
Nor all the drowſy ſirups of the world,
Shall ever med'cine thee to that ſweet ſleep
Which thou *oweds't* yeſterday. *Shak.*
Mine is the wag; 'tis I that *owe*
The winged wand'rer. *Craſhaw.*

(1.) OWEGO, a river of New York in Tyoga county, which runs into the Suſquehannah.

(2.) OWEGO, a poſt town of New York, in Tyoga county, on the banks of the above river; 20 miles W. of Union, and 284 from Philadelphia. In 1796, it contained 170 electors.

(1.) OWEN, Dr John, an eminent and learned diſſenting miniſter, born in 1616, at Hadham, in Oxfordſhire, of which place his father was vicar. At 12 years of age he was admitted into Queen's-college, Oxford, and in 1635 was made A. M.; but ſoon after, diſapproving the new regulations made by Abp. Laud their chancellor, he was obliged, in 1637, to leave the univerſity; when taking orders, he became chaplain to Sir Robert Dormer of Aſcot in Oxfordſhire, and tutor to his eldeſt ſon. He was afterwards chaplain to John Lord Lovelace of Hurley in Berkſhire. When the civil war broke out, he openly avowed the cauſe of the parliament, which cauſed his uncle to diſinherit him. When Lord Lovelace joined the royal army, Mr Owen went to London, and ſoon after joined the non-conformiſts. The earl of Warwick gave Mr Owen the living of Coggeſhal; where he ſoon left the Preſbyterians, and formed a church of Independents. He was now ſent for ſeveral times to preach before the parliament; and Cromwell was ſo pleaſed with him, that he took him to Ireland, where he remained about half a year.

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year. Soon after, Cromwell ſent him into Scotland; but he alſo returned from thence after about half a year's ſtay at Edinburgh. He was then promoted to the deanery of Chriſt-church, Oxford, whither he went in 1651; and Cromwell, being now chancellor of the univerſity, nominated him his vice-chancellor. The next year he was created D. D. Dr Owen enjoyed the poſt of vice-chancellor five years; during which he behaved with the greateſt moderation to the royaliſts. At the death of Cromwell, he was removed from the vice-chancellorſhip; and at the Reſtoration was ejected from his deanery of Chriſt-church, when he retired to an eſtate he had purchaſed at Hadham. Lord Clarendon afterwards offered to prefer him if he would conform, but he declined. He died at Ealing in 1683. His works are printed in 7 vols. folio.

(2.) Owen, Rev. Charles, a diſſenting clergyman, born in 1654, at Montgomery. He was miniſter at Bridgenorth in Shropſhire, and wrote ſeveral tracts in defence of the Non-conformiſts. He died in 1712, aged 58.

(3.) Owen, John, an excellent epigrammatiſt, born in Caernarvonſhire, and educated at Wincheſter, and at New College, Oxford, where he took his degree of L.L.B. He became ſchoolmaſter at Tryleigh, and afterwards at Warwick. His Latin Epigrams, *Joannis Audoeni Epigrammata*, were much eſteemed, both at home and abroad, and went through many editions and tranſlations. He died in 1622.

(4.) Owen, George, an eminent Engliſh phyſician, educated at Merton College, Oxford. He was phyſician to Henry VIII. who left him L.100 by his will. He alſo ſerved Edward VI. whom he brought into the world by the Cæſarean operation; and Q. Mary I. He wrote *A Meet Diet for the New Ague;* Lond. 1558, fol. and died in 1558.

(5.) Owen, Henry, a late learned divine, born in 1715, in Monmouthſhire, and educated firſt at Ruthin, and next at Jeſus College, Oxford, where he took the degree of M. D. He afterwards entered into orders, and became vicar of Edmonton, in Middleſex, and St Olaves, London. His works are, 1. Obſervations on Scripture Miracles: 2. Remarks on the 4 Goſpels: 3. Inquiry into the LXX. verſion: 4. Sermons preached at Boyle's Lecture: 5. Introduction to Hebrew Criticiſm: 6. Modes of Quotation uſed by the Evangeliſts: 7. Sermons, 2 vols. He died in 1795, aged 80.

(6.) Owen, Thomas, a judge of the common pleas, ſon of Richard Owen, Eſq. of Condover in Shropſhire. He was educated at Oxford, and having taken his degree of A. M. he left the univerſity, and entered himſelf of Lincoln's-inn in London, where he became an eminent counſellor. In 1583 he was elected Lent reader to that ſociety. In 1590 he was made ſerjeant at law, and queen's ſerjeant ſoon after. In 1593, he was made judge of the common-pleas; which office he executed with great abilities and integrity. He died in 1598; and was buried in Weſtminſter abbey, where a monument was erected to his memory. He was a learned man, and a patron of literature. He was the author of *Reports in the common pleas*, Lond. 1656, folio.

(7.) Owen, in geography, a town of Suabia, in Wurtemburg, 18 miles SE. of Stuttgart.

OWERRA, or Oviro, a town and territory of Guinea, in the kingdom of Benin. The climate is unhealthy and the ſoil dry, yet it produces cocoa nuts, bananas, &c. The people are handſome, and are marked with three inciſions, on the fore-head, and on each temple. Lon. 6. 0. E. Lat. 6. 0. W.

OWEY, an iſland on the NW. coaſt of Ireland. Lon. 6. 21. W. Lat. 55. 3. N.

OWHARREE, a harbour on the W. coaſt of Huaheine Lon. 151. 8. W. Lat. 16. 54. S.

OWHYHEE, the eaſtermoſt, and by far the largeſt, of the Sandwich iſlands. Its greateſt length from N. to S. is 28½ leagues, its breadth 24, and its circumference nearly 300 Engliſh miles. It is divided into ſix large diſtricts; two of which on the NE. ſide are ſeparated by a mountain that riſes in three peaks, which are perpetually covered with ſnow, and may be ſeen clearly at 40 leagues diſtance. To the N. of this mountain, the coaſt conſiſts of high and ſteep cliffs, down which fall many beautiful caſcades. The whole country is covered with cocoa-nut and bread-fruit trees. The peaks of the mountains on the NE. ſide are about half a mile in height, and entirely covered with ſnow. To the S. of this mountain, the coaſt preſents a proſpect of the moſt dreary kind, the whole country appearing to have undergone a total change by ſome dreadful convulſion. Among the plantations are a few huts, for ſhelter to the labourers; but there are no villages at a greater diſtance from the ſea than 4 or 5 miles. There are ſuppoſed to be on this iſland about 150,000 inhabitants. "The men are above the middle ſize, ſtout, well made, and fleſhy, but not fat. Their colour is brown olive. The women are in general maſculine, though there are ſome exceptions. The features of both ſexes are good, and ſome of the females are really fine women. They are very healthy, and ſome live to a great age. They are all thieves, without exception. The cuſtom of tattowing prevails greatly among them, but the men have a much larger ſhare of it than the women. Both men and women are very cleanly in their perſons; the latter waſh their whole bodies in freſh water twice, and ſometimes three times a-day. They are extremely laſcivious, and their women are laviſh of their favours to all comers. "Their clothing conſiſts of cloth of different kinds: that worn by the men, which is called *marro*, is about half a yard wide, and four yards long; that of the women, three quarters of a yard wide, and of the ſame length as the men's: this they call *pah-o-ouwa;* they both wear it round their middle, but the men paſs it between their legs. This is the general dreſs of both ſexes; but the better ſort ſometimes throw a large piece looſely over their ſhoulders. Beſides the marro, they have ſeveral other kinds of cloth; all, however, are made from the Chineſe paper mulberry tree. The principal of theſe is the cappa, which is about 10 or 12 feet long, and nearly as many wide, and is thick and warm; they wrap themſelves up in this when they retire to ſleep. They have another kind, which is white, and much thinner;

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thinner; it is ſometimes 20 or 30 yards long, and wide in proportion. The marro and pah-o-ouwa are curiouſly painted of various patterns, but the others are generally white, or dyed red, black, and yellow. The principal ornaments of the men are feather-caps and cloaks. They have alſo a kind of fly-flap made of a bunch of feathers, fixed to the end of a thin piece of ſmooth and poliſhed wood. The handle is very frequently made of one of the bones of the arm or leg of thoſe whom they have killed in battle, curiouſly inlaid with tortoiſe-ſhell: theſe they deem very valuable, and will not part with them under a great price. This ornament is common to the ſuperiors of both ſexes. The ornament which the women value moſt is the orai. This is a kind of ruff or necklace, made of red, green, black, and yellow feathers, curiouſly put together, and in moſt elegant patterns. Others are compoſed of ſmall variegated ſhells, and ſome conſiſt of ſeveral rows of twiſted hair, with a piece of carved wood or bone, highly poliſhed, the bottom part forming a curve. They have alſo the poo-remah or bracelot; the moſt valuable of which are made of boar's tuſks faſtened together ſide by ſide with a piece of ſtring, by means of a hole drilled through the middle. Lon. 156. 0. W. Lat. 19. 28. S.

* OWING. *part.* [from *owe*. A practice has long prevailed among writers, to uſe *owing*, the active participle of *owe*, in a paſſive ſenſe, for *owed* or *due*. Of this impropriety ſome writers were aware, and having no quick ſenſe of the force of Engliſh words, have uſed *due* in the ſenſe of conſequence or imputation, which by other writers is only uſed of *debt*. We ſay, the money is *due* to me; they ſay likewiſe, the effect is *due* to the cauſe.] 1. Conſequential.—This was *owing* to an indifference to the pleaſures of life. *Atterbury.* 2. Due as a debt. Here *due* is undoubtedly the proper word.—

I'll teach you all what's *owing* to your queen. *Dryden.*

—The debt, *owing* from one country to the other, cannot be paid without real effects ſent thither to that value. *Locke.* 3. Imputable to, as an agent.—If we eſtimate things, what in them is *owing* to nature, and what to labour, we ſhall find in moſt of them 99 hundreds to be on the account of labour. *Locke.*—The cuſtom of particular impeachments was not limited, any more than that of ſtruggles between nobles and commons; the ruin of Greece was *owing* to the former, as that of Rome was to the latter. *Swift.*

(1.) * OWL. OWLET. *n. ſ.* [*ule*, Saxon; *hulote*, French and Scottiſh.] A bird that flies about in the night and catches mice.—

Lizard's leg, and *owlet's* wing
For a charm. *Shak. Macbeth.*

Return to her!
No! rather I abjure all roofs, and chooſe
To be a comrade with the wolf and *owl*. *Shak.*

Sick was the ſun, the *owl* forſook his bow'r. *Dunciad*

Then lady Cynthia, miſtreſs of the ſhade,
Goes, with the faſhionable *owls*, to bed. *Young.*

(2.) OWL, in ornithology. See STRIX

* OWLER. *n. ſ.* One who carries contraband goods: in the legal ſenſe, one that carries out wool illicitly. Perhaps from the neceſſity of carrying on an illicit trade by night: but rather, I believe, a corruption of *woollер*, by a colloquial neglect of the *w*, ſuch as is often obſerved in *woman*, and by which *goodwife* is changed to *goody*. *Woollер, ooller, owler.*—

By running goods, theſe graceleſs *owlers* gain. *Swift.*

—We underſtand by ſome *owlers*, old people die in France. *Tatler.*

OWLET. See OWL.

OWLING, ſo called from its being uſually carried on in the night, is the offence of tranſporting wool or ſheep out of this kingdom, to the detriment of its ſtaple manufacture. This was forbidden at common law, particularly by ſtat. 11 Edw. III. c. 1. when the importance of our woollen manufacture was firſt attended to; and there are now many later ſtatutes relating to this offence, the principal of which are thoſe enacted in the reign of Q. Elizabeth, and ſince. The ſtat. 8 Eliz. c. 3. makes the tranſportation of live ſheep, or embarking them on board any ſhip, for the firſt offence, forfeiture of goods, and impriſonment for a year, and that at the end of the year the left hand ſhall be cut off in ſome public market, and ſhall be there nailed up in the openeſt place; and the ſecond offence is felony. The ſtatutes 12 Car. II. c. 32. and 7 & 8 Will. III. c. 28. makes the exportation of wool, ſheep, or fuller's earth, liable to pecuniary penalties, and the forfeiture of the intereſt of the ſhip and cargo by the owners, if privy; and confiſcation of goods, and three years impriſonment to the maſter and all the mariners. And the ſtatute 4 Geo. I. c. 11. (amended and farther enforced by 12 Geo. II. c. 21. and 19 Geo. II. c. 34.) makes it tranſportation for 7 years, if the penalties be not paid.

OWL'S HEAD, two capes of N. America: 1. on the W. ſide of Penobſcot bay, on the coaſt of Maine: 2. on the SE. coaſt of Nova Scotia. Lon. 62. 50. W. Lat. 44. 42. N.

* OWN. *n. ſ.* [*agen*, Saxon; *eygen*, Dutch.] 1. This is a word of no other uſe than it is added to the poſſeſſive pronouns, my, thy, his, our, your, their. It ſeems to be a ſubſtantive; as, *my own, my peculiar*: but is, in reality, the participle paſſive of the verb *owe*, in the participle *owen* or *own*: *my own*; the thing *owned* by, or belonging to me.

Inachus in his cave alone,
Wept not another's loſſes, but his *own*. *Dryden.*

2. It is added generally by way of emphaſis or corroboration.—

I yet never was forſworn,
Scarcely have coveted what was my *own*. *Shak.*

—Every nation made gods of their *own*. 2 *Kings*, xvii. 29.—

For my *own* ſhare one beauty I deſign. *Dryd.*

—It is conceit rather than underſtanding, if it muſt be under the reſtraint of receiving and holding opinions by the authority of any thing but their *own* perceived evidence. *Locke.*—

Will ſhe thy linen waſh, or hoſen darn,
And knit thee gloves made of her *own* ſpun yarn? *Gay.*

Convinc'd that virtue only is our *own*. *Pope.*

3. Sometimes it is added to note oppoſition or contradiſtinction;

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contradiſtinction; domeſtick; not foreign; mine, his, or yours; not another's.—

Theſe toils abroad, theſe tumults with his *own*,
Fell in the revolution of one year. *Daniel.*

—There's nothing ſillier than a crafty knave outwitted, and beaten at his *own* play. *L'Eſtrange.*

* *To* OWN. *v. a.* [from the noun.] 1. To acknowledge; to avow for one's own.—

When you come, find me out,
And *own* me for your ſon. *Dryden's Cleomenes.*

2. To poſſeſs; to claim; to hold by right.—

Tell me, ye Trojans, for that name you *own*.
Dryden.

Of theſe the chief, the care of nations *own*,
And guard with arms divine the Britiſh throne.
Pope.

3. To avow.—The barbarous Indians likewiſe have *owned* their tradition. *Wilkins.*—

I'll venture out alone,
Since you, fair princeſs, my protection *own*.
Dryden.

3. To confeſs; not to deny.—Thoſe who are unwilling to *own* it may yet be aſhamed to deny it. *Tillotſon.*—Others will *own* their weakneſs of underſtanding. *Locke.*—It muſt be *owned*, that good parents are never more fond of their daughters, than when they ſee them too fond of themſelves. *Law.*

* OWNER. *n. ſ.* [from *own*.] One to whom any thing belongs; maſter; rightful poſſeſſor.—

A bark
Stays but till her *owner* comes abroad. *Shak.*

It is not enough to break into my garden,
Climbing my walls in ſpite of me the *owner*,
But thou wilt brave me. *Shak.*

—The *owner* hath incurred the forfeiture of eight years profit of his lands, before he cometh to the knowledge of the proceſs againſt him. *Bacon.*—

They intend advantage of my labours,
With no ſmall profit daily to my *owners*. *Milt.*

Theſe wait the *owners* laſt deſpair,
And what's permitted to the flames invade.
Dryden.

—A freehold, though but in ice and ſnow, will make the *owner* pleaſed in the poſſeſſion. *Addiſon's Freeholder.*—That ſmall muſcle draws the noſe upwards, when it expreſſes the contempt which the *owner* of it has upon ſeeing any thing he does not like. *Spectator.*—Victory hath not made us inſolent, nor have we taken advantage to gain any thing beyond the honour of reſtoring every one's right to their juſt *owners*. *Atterbury.*—

What is this wit, which muſt our cares employ?
The *owner's* wife, that other men enjoy. *Pope.*

* OWNERSHIP. *n. ſ.* [from *owner*.] Property; rightful poſſeſſion.—In a real action, the proximate cauſe is the propriety or *ownerſhip* of the thing in controverſy. *Ayliffe's Parergon.*

(1.) * OWRE. *n. ſ.* [*urus jubatus*, Latin.] A beaſt. *Ainſworth.*

(2.) OWRE, or URUS. See Bos, § IV, N° xi. 5.

OWTRAM, William, a learned Engliſh divine, who was prebendary of Weſtminſter under Charles II. and wrote an excellent treatiſe, *De Sacrificiis*. He died in 1679. His ſermons were publiſhed in one volume, after his death.

(1.) * OX. *n. ſ.* plur. OXEN. [*oxa*, Saxon; *oxe*, Daniſh.] 1. The general name for black cattle.—The black *ox* hath not trod on his foot. *Camden.*—

Sheep run not half ſo tim'rous from the wolf,
Or horſe or *oxen* from the leopard,
As you fly from your oft-ſubdued ſlaves. *Shak.*

—I ſaw the river Clituminus, celebrated by the poets for making cattle white that drink of it. The inhabitants of that country have ſtill the ſame opinion, and have a great many *oxen* of a whitiſh colour to confirm them in it. *Addiſon.* 2. A caſtrated bull.—The horns of *oxen* and cows are larger than the bulls; which is cauſed by abundance of moiſture. *Bacon.*—Although there be naturally more males than females, yet artificially, that is, by making geldings, *oxen* and weathers, there are fewer. *Graunt.*—

The field is ſpacious I deſign to ſow,
With *oxen* far unfit to draw the plough. *Dryd.*

The frowning bull
And *ox* half-rais'd. *Thomſon.*

(2.) Ox. See Bos, § IV. N°. i.—xi. The beſt time for caſtrating bulls is at the age of puberty, or when they are 18 months or 2 years old; when performed ſooner, they often die; but if they ſurvive the operation, ſuch generally grow larger and fatter as have been caſtrated a few days after birth. The ox is the only horned animal in theſe iſlands that will apply its ſtrength to the ſervice of mankind. The beſt time for inuring him to labour is at the age of 2½ or 3 years. It is now generally allowed, that, in the draught, oxen are in many caſes more profitable than horſes; their food, harneſs, and ſhoes, being cheaper; and ſhould they be lamed or grow old, an old working beaſt will be as good meat, and fatten as well, as a young one. There is ſcarce any part of this animal without its uſe. The blood, fat, marrow, hide, hair, horns, hoofs, milk, cream, butter, cheeſe, whey, urine, liver, gall, ſpleen, bones, and dung, have each their particular uſe in manufactures, commerce, and medicine.

(3.) Ox, in geography, a river of Louiſiana.

(4.) Ox, a mountain of Ireland, in Sligo.

OXALAS, } a ſalt formed by the combination
OXALAT, } of the oxalic acid with different baſes. See CHEMISTRY, *Index*. "This genus of ſalts, (ſays the ingenious Dr Thomſon,) was firſt made known by Bergman, who deſcribed the greater number of them in his *Diſſertation on Oxalic Acid*, in 1776. They are diſtinguiſhed by theſe properties: 1. When expoſed to a red heat, their acid is decompoſed and driven off, and the baſe only remains. 2. Lime water precipitates a white powder from their ſolutions, which is ſoluble in acetous acid, after being expoſed to a red heat. 3. The earthy oxalats are nearly inſoluble in water: the alkaline oxalats are capable of combining with an exceſs of acid, and forming *ſuper-oxalats* much leſs ſoluble than the oxalats." Dr Thomſon enumerates 9 ſpecies of oxalats; viz.

1. "OXALAT OF ALUMINA. Oxalic acid readily diſſolves alumina, and forms a ſalt which is uncryſtallizable; but furniſhes on evaporation a yelloviſh pellucidneſs. It is ſparingly ſoluble in alcohol; has a ſweet aſtringent taſte; is compoſed of 44 parts alumina, and 56 acid and water; deli-

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queſces if expoſed to air, and increaſes ⅓ in weight; and reddens turnſole.

2. "OXALAT OF AMMONIA is formed by the oxalic acid ſaturated with ammonia, and is cryſtallized in four-ſided priſms, with dihedral ſummits; ſoluble in water, but not in alcohol. When diſtilled, carbonat of ammonia is diſengaged, part of the ſalt is ſublimed, and a reſiduum of charcoal remains. This ſalt is much uſed as a re-active to detect lime. It combines with an exceſs of acid, and forms a *ſuper-oxalat*.

3. "OXALAT OF BARYTES. Oxalic acid readily diſſolves barytes, and the ſolution, when ſaturated, lets fall ſmall tranſparent cryſtals of oxalat of barytes, as that ſalt is little ſoluble in water. Theſe contain an exceſs of acid; but boiled in water they loſe it, and fall down in the ſtate of an inſoluble powder.

4. "OXALAT OF LIME is readily formed, by dropping oxalic acid into any of the acid ſolutions of lime. It immediately precipitates in the ſtate of a white inſipid powder, inſoluble in water, and giving a green colour to ſyrup of violets. It is compoſed of 48 parts acid, 46 lime, and 6 water. No acid, alkali, or earth, decompoſes this ſalt, but it is eaſily decompoſed by heat.

5. "OXALAT OF MAGNESIA is obtained in the form of a white powder, by ſaturating oxalic acid with magneſia, and evaporating the ſolution. It is ſcarcely ſoluble in water in alcohol, but heat decompoſes it. It is compoſed of 65 parts acid and water, and 35 magneſia.

6. "OXALAT OF POTASS is eaſily formed by diſſolving potaſs in oxalic acid; but the ſolution does not readily cryſtallize, unleſs there be a ſlight exceſs of the acid or the baſe. A ſolution of two parts carbonat of potaſs, in one part of acid, yields ſix-ſided priſms, like the cryſtals of oxalic acid. Theſe fall to powder when heated; give a green tinge to litmus paper, but redden tincture of litmus and ſyrup of violets.

7. "OXALAT OF POTASS in exceſs, or SUPER-OXALAT OF POTASS, exiſts ready formed in OXALIS ACETOSELLA, and in the RUMEX ACETOSA; (ſee theſe articles); from which it is extracted in great quantities; hence named *Salt of Wood Sorrel*, and ſold here under the name of *Eſſential ſalt of lemons*. It is mentioned by *Duclos* in the *Mem. French Acad.* for 1668; Margraff proved it to contain potaſs; and Scheele found its acid to be the oxalic. Many intereſting experiments were made on it by Wenzel and Wiegleb. It is formed by dropping potaſs very gradually into a ſaturated ſolution of oxalic acid in water. As ſoon as the proper quantity of alkali is added, the ſuper-oxalat is precipitated. But care muſt be taken not to add too much alkali, elſe no precipitation will take place. Its cryſtals are ſmall opaque parallelopipeds; it has an acid, pungent, bitteriſh, taſte, is ſoluble in ten times its weight of boiling water, is not altered by air, but is decompoſed by heat. It combines with moſt alkalies and earths, and forms with them triple ſalts. See CHEMISTRY, *Index*.

8. "OXALAT OF SODA. When two parts of cryſtallized carbonat of ſoda are diſſolved in one of oxalic acid, the oxalat of ſoda partly precipitates, as it is but ſparingly ſoluble in water. The remaining ſolution yields by evaporation cryſtalline grains, which tinge ſyrup of violets green, and are are perfectly ſoluble in hot water. This ſalt combines with an exceſs of acid, and forms a ſuper-oxalat ſparingly ſoluble in water.

9. "OXALAT OF STRONTIAN, firſt examined by Dr Hope, and afterwards by Vauquelin, is readily formed by mixing a ſolution of oxalat of potaſs (N° 6.) and nitrat of ſtrontian. It immediately precipitates: it is a white inſipid powder, ſoluble in 1920 parts of boiling water. Heat decompoſes it by deſtroying the acid. It is compoſed of 40·5 parts of acid and 59·5 ſtrontian." *Syſtem of Chemiſtry*, Vol. II. p. 406—410.

OXALIC ACID, ACID OF SUGAR, or ACID OF SORREL. See ACID, SACCHARINE; and CHEMISTRY, *Index*. "When nitric acid (ſays Dr Thomſon) is poured upon ſugar, and a moderate heat applied, the ſugar ſoon melts, an effervescence enſues, a great quantity of nitrous gas, and carbonic acid gas is emitted; and when the effervescence ceaſes, and the liquid in the retort cools, a ſmall number of ſmall tranſparent cryſtals appear in it. Theſe conſtitute a peculiar acid, which is named *Oxalic Acid*, becauſe it exiſts ready formed, as Scheele has proved, in the OXALIS ACETOSELLA. As the earlieſt and beſt account of it was publiſhed by Bergman, he was long reckoned the diſcoverer of it;" but it is now fully aſcertained, that it was firſt diſcovered by Mr Scheele. Sir T. Bergman's proceſs is as follows: "Put 1 oz. of white ſugar powdered into a tubulated retort, with 3 oz. of ſtrong nitric acid. When the ſolution is over, during which much nitrous acid eſcapes, let a receiver be fitted, and the liquor boiled, by which more gas is expelled. When the liquor is of a reddiſh brown colour, add 3 oz. of nitric acid, and continue boiling till the fumes ceaſe and the colour vaniſh. Then empty the contents into a wide veſſel, and, on cooling, a cryſtallization will take place, of ſlender quadrilateral priſms, often affixed to each other at an angle of 45°. Theſe cryſtals weigh 1½ dr. 19 gr. By boiling the remaining lixivium with 2 oz. of nitric acid, till the red fumes almoſt diſappear, and repeating the cryſtallization, ½ dr. 13 gr. of ſolid acid will be obtained. If the proceſs be repeated upon the reſiduum, which is now glutinous, with ſucceſſive additions of ſmall quantities of nitric acid, amounting in all to 2 oz. a ſaline brown deliqueſcent maſs will be formed, weighing half a dram."—"It is of great conſequence (adds Dr Thomſon) not to uſe too much nitric acid, elſe the quantity of oxalic acid will be diminiſhed; if a *very great* quantity be uſed, *none* will be obtained; and if too ſmall a quantity, the acid obtained will not be the *oxalic*, but the *tartarous*. Oxalic acid, thus prepared, is in the form of four-ſided priſms, whoſe ſides are alternately larger, and they are terminated at the extremities by two-ſided ſummits. They are tranſparent and colourleſs, have a very acid taſte, and redden all vegetable blues, except indigo. They are ſoluble in their own weight of boiling water; 100 parts of boiling alcohol diſſolves 56 parts of them; but at a mean temperature only 40. Liquid oxalic acid concentrated has a very acrid taſte; but is very agreeable when diluted. Morveau ſays one part of it is ſufficient to communicat:

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municate a ſenſible acidity to 2,653 parts of water. One grain of it diſſolved in 1920 gr. of water reddens blue paper. Its fixity is ſuch, that none of it is ſublimed when its ſolution is raiſed to the boiling pitch. It is not affected by expoſure to air, or oxygene gas. It oxidates all the metals, except gold, ſilver, platinum, and mercury. Muriatic and acetous acids diſſolve but do not alter it. Sulphuric and nitric acids decompoſe it by heat. Its compoſition, aſcertained by Fourcroy and Vauquelin is 77 parts of oxygen, 13 carbon, and 10 hydrogen. Its affinities, according to Bergman, are theſe: Lime, barytes, ſtrontian, magneſia, potaſs, ſoda, ammonia, alumina, metallic oxides, water, alcohol. See OXALAT, § 1—9.

OXALIS, woodsorrel, a genus of the pentagynia order, belonging to the decandria claſs of plants, and in the natural method ranking under the 14th order, *Gruinales*. The calyx is pentaphyllous, the petals connected at the heels, the capſule pentagonal, and opening at the angles. There are 7 ſpecies; the only remarkable one is

OXALIS ACETOSELLA, common woodſorrel. This grows naturally in moiſt ſhady woods, and at the ſides of hedges in many parts of Britain, and is ſeldom admitted into gardens. The roots are compoſed of many ſcaly joints, which propagate in great plenty. The leaves ariſe immediately from the roots upon ſingle long foot-ſtalks, and are compoſed of three heart-ſhaped lobes. They are gratefully acid, and of uſe in the ſcurvy and other putrid diſorders.

OXATHRES, a brother of Darius Codomannus, who was highly honoured by Alexander the Great, and appointed one of his generals. *Curt.* vii. 5.

* OXBANE. *n. ſ.* [*buphonous.*] A plant. *Ainſ.*

OXBOW, a bend of the Connecticut, in Vermont, in the townſhip of Newbury; containing 450 acres of excellent meadow land.

OXEN. *n. ſ.* the plural of Ox. See Bos, § IV. N° i—xi; and Ox, § 1, 2.

OXENBACH, a town of Auſtria, nine miles S. of Ips.

OXENBERG, a town of Denmark, in the iſle of Funen, near Aſſens, where Count Oldenburg was defeated by Chriſtian III. in 1535.

OXENBORN, two Engliſh villages in Hants.

OXENDEN, two ſmall towns: 1. In Glouceſter, E. of Tewkſbury: 2. In Northamptonſhire, S. of Harborough.

OXENFORD, a town of Surry, on the Wey, SW. of Godalmin.

OXENHAM. See OXNAM, N° 1, 2.

OXENHEATH, a town of Kent, between Maidſtone and Tunbridge.

OXEY, a town of Herts, S. of Watford.

(1.) * OXEYE. *n. ſ.* [*buphthalmus.*] A plant. *Miller.*

(2.) OX-EYE, in botany. See BUPHTHALMUM.

(3.) OX-EYE, in ornithology. See CERTHIA.

(4.) OX-EYE DAISY, a ſpecies of CHRYSANTHEMUM.

(1.) * OXFLY. *n. ſ.* [from *ox* and *fly*; *talbanus*, Lat.] A fly of a particular kind.

(2.) OX-FLY, in entomology. See OESTRUS, N° 1.

(1.) OXFORD, the capital of OXFORDSHIRE, is celebrated for its univerſity, and pleaſantly ſituated in a plain fruitful country. In the year 806 the univerſity of Oxford was begun under the auſpices of St Grimbald; but was not eſtabliſhed by royal authority till 886, when it was viſited by the great K. Alfred. The firſt who preſided and read divinity lectures in it was St Neoth, aſſiſted by St Grimbald; Aſſer, the monk, profeſſed grammar and rhetoric; John, monk of the church of St David, gave lectures on logic, muſic, and arithmetic; and John the monk, colleague of St Grimbald, taught geometry and aſtronomy. The Danes, in the reign of Edward I. plundered and burnt the place; and ſoon after Harold Harefoot practiſed the moſt inhuman barbarities here, in revenge for ſome of his men who were killed in an affray; ſo that the moſt melancholy remove of the ſtudents enſued, and the univerſity remained almoſt extinct, a lamentable ſpectacle, till the time of William the Norman. About 1129, Robert Pulen began to read lectures in divinity; and ſuch was the reſort of ſtudents to it, that, in the reign of King John, there were not fewer than 3000. Robert d'Oily, a Norman, to whom William the Conqueror had given the greateſt part of it, built a caſtle on the weſt ſide of it, in 1071. In a palace built by Henry I. was born Richard I. commonly called *Cœur de Lion*. About the 10th of King John there happened a quarrel between the citizens and ſtudents, in conſequence of which many of the latter quitted it, but returned again a few years afterwards. Here Henry III. held a parliament to ſettle the differences betwixt him and his barons; when he confirmed the privileges granted to the univerſity by his predeceſſors, and added others. In this reign the ſtudents are ſaid to have been 30,000, who were all excommunicated by the pope for ſome rudeneſs to his legate. In the time of Duns Scotus, we are told that 30,000 ſcholars attended his lectures. Matthew Paris ſtyles the univerſity of Oxford, 'the 2d ſchool of the church after Paris, and the very foundation of the church.' The popes had before this honoured it with the title of *Univerſity*, which they had conferred by their decrees on no other but that of Paris, this of Oxford, and thoſe of Bologna and Salamanca. Colleges began about this time to be founded and endowed. The following is a liſt of them, with the time when, and the perſons by whom, they were founded:—

Colleges.	*Founders.*	*King's reign.*
Univerſity.	King Alured.	Alfred.
Baliol.	Sir John Baliol, father to the king of Scots.	Henry III.
Merton.	Walter Merton, lord chancellor and biſhop of Rocheſter.	Edw. I.
Oriel.	Edward II.	Edw. II.
Exeter.	Walter Stapleton, Biſhop.	Edw. II.
Queen's.	Robert Egleſfield, B. D.	Edw. III.
New College.	William of Wickham, Biſhop of Wincheſter, lord chancellor.	Edw. III.
Lincoln.	Richard Fleming, Biſhop of Lincoln.	Henry VI.
All-Souls.	Hugh Chicheley, Archbiſhop of Canterbury.	Henry VI.
Magdalen.	William Wainfleet, Bp. of Wincheſter, lord chancellor.	Henry VI.

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Colleges.	Founders.	King's reign.
Brazen-Nose.	William Smith, Bp. of Lincoln, and Richard Sutton, Esq.	Hen. VIII.
Corpus Christi.	Richard Fox, Bishop of Winchester, and Lord privy seal.	Hen. VIII.
Christ-Church.	Henry VIII. and Card. Wolsey.	Hen. VIII.
Trinity.	Sir Thomas Pope.	Mary.
St John Baptist.	Sir Thomas White, merchant of London.	Mary.
Jesus.	Queen Elizabeth.	Elizabeth.
Wadham.	Nicholas and Dorothy Wadham.	James I.
Pembroke.	Thomas Tisdale, Esq. and Doctor Richard Whitwick.	James I.

Worcester was called *Gloucester-hall* till lately, when it was endowed by Sir Thomas Coke, and made collegiate. Hartford was *Hart-hall* till 1740, when it was erected into a college by Dr Richard Newton. All these are richly endowed, and have fine gardens, libraries, chapels, &c. The most considerable of these colleges are Magdalen and Christ-church, which are as noble foundations as any in the world. The church of the latter is the cathedral, and has a dean, 8 canons, 8 chaplains, 8 singing men, 8 choristers, a teacher of music, and an organist. Each of the colleges has its visitor appointed by its statutes, except Christ-church, which is subject to the visitation of the Sovereign alone. The other remarkable buildings belonging to the university, are, 1. the public schools; 2. the Bodleian or public library; 3. Ratcliffe's library, a most elegant structure, for building and furnishing which, Dr Ratcliffe left 40,000l.; 4. the theatre, built by Sheldon, archbishop of Canterbury; 5. the museum, in which is an elaboratory and a repository for natural and artificial rarities and antiquities; 6. the Clarendon printing-house, so called because it was built partly with the money arising to the university by the sale of Lord Clarendon's history. To the south of Magdalen college lies the physic garden, instituted by the Earl of Danby, and much improved by Dr Sherrard. It contains five acres, in which is a complete series of such plants as grow naturally, disposed in their respective classes; together with two neat and convenient green-houses, stocked with a valuable collection of exotics, and a hot-house, where various plants brought from the warmer climates are raised. The whole body of the university, including professors, fellows, and students of all sorts exceeds 3000. Each college has its particular statutes and rules for government. There are four terms in the year for public exercises, &c. and particular days and hours for public lectures, by the several professors. The university is governed by a chancellor, high steward, vice-chancellor, two proctors, 2 public orator (see ORATOR, § 2.); a keeper of the archives, a register, 3 esquire beadles, and 3 yeomen beadles. See UNIVERSITY. The city has had the same privileges granted to it as London, particularly an exemption from toll, all over England. It was made an episcopal see in 1541, when Robert King, the last abbot of Oseney, was elected bishop. It is governed by a mayor, high steward, recorder, 4 aldermen, 8 assistants, 2 bailiffs, a town-clerk, two chamberlains, all that have borne the office of bailiff and chamberlain, and 24 common council-men; but these are subject to the chancellor or vice-chancellor of the university in all affairs of moment; and not only the mayor, but the principal citizens and sheriff of the county take an oath to maintain the privileges of the university. The city, including the colleges, is a place of considerable magnitude, having 13 parish churches, besides the cathedral, well built, clean, and regular. The male line of the family of Vere, who had been earls of Oxford, for 500 years, failing in Aubrey de Vere, who was twentieth earl, Q. Anne conferred the title upon Robert Harley, a descendant of the Veres, in whose family it still continues. The chief trade of the city is in malt, conveyed in barges to London. It is 40 miles SW. of Buckingham, 40 SW. of Bedford, 45 SE. of Worcester, and 58 W. by N. of London. Lon. 1. 10. W. Lat. 51. 45. N.

(2.) OXFORD, a sea-port town of Maryland, on the Eastern shore, in Talbot county, seated on the Tradehaven. Its exports in 1794 amounted to 6956 dollars. It is 13 miles S. by W. of Easton, 48 SE. of Baltimore, and 128 SW. of Philadelphia. Lon. 1. 2. W. of that city. Lat. 38. 41. N.

(3.) OXFORD, a township of Massachusetts, in Worcester county; containing 1000 citizens in 1795; 11 miles S. of Worcester, and 54 SW. of Boston.

(4.) OXFORD, a town of Massachusetts, in Bristol county.

(5.) OXFORD, a post town of N. Carolina; 416 miles from Philadelphia, and 36 from Hillsborough.

(6.) OXFORD, a town of New Hampshire, 11 miles E. of Chesterfield.

(7.) OXFORD, a town of New Jersey, in Sussex county, on the E. bank of the Delaware, containing 1840 citizens and 65 slaves in 1795; 18 miles NE. of Easton, and 28 W. of Morristown.

(8, 9.) OXFORD, a town and township of New York, in Tyoga county, 45 miles NE. of Union. The township lies between Jericho and Union; and is bounded N. by Norwich, and W. by Chenengo Triangle.

(10, 11.) OXFORD, two townships of Pennsylvania: 1. In Chester: and, 2. In Philadelphia counties.

(12.) OXFORD, or OXFORDSHIRE, a county of England, which made part of the territory of the ancient *Dobuni*, bounded on the W. by Gloucestershire; on the S. where it is broadest, by the river Isis, which divides it from Berkshire; on the E. by Buckinghamshire; and on the N. where it terminates in a narrow point, it has on the one side Northamptonshire, and on the other Warwickshire. It extends 50 miles from N. to S. and 35 from E. to W. making about 130 miles in circumference; within which are contained one city, 14 market towns, 280 parishes, 14 hundreds, 534,000 acres, and about 110,000 souls. The air is pleasant, and the soil rich and fertile. The lower parts consist of meadows and corn fields, and the higher

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higher were covered with woods till the civil wars; in which they were so entirely destroyed, that wood is now extremely scarce, except what is called the CHILTERN; and so is coal; of consequence fuel bears an exorbitant price. The county is extremely well watered; for besides the Isis, Tame, Cherwell, Evenlode, and Windrush, there are many lesser rivers and brooks. One of the four great Roman ways passes quite through this county, entering at the parish of Chinner, and going out at that of Goring. There is another lesser one, that extends between Coinbrook and Wallingford, called GRIMM'S DIKE. The county sends 9 members to parliament, viz. 2 for the county, 2 for the city, 2 for the university, 2 for New Woodstock, and one for Banbury. By the report made to parliament, of the population of Great Britain, in June 1801, this county contained 20,615 houses; 53,784 males; 55,937 females; in all 109,721 souls.

(1.) * OXGANG *of land. n. s.* Twenty acres. *Ainsw.*

(2.) *An* OXGANG, OR OXGATE OF LAND, is generally taken, in old law books, for 15 acres, or as much ground as a single ox can plough in a year.

* OXHEAL. *n. s.* [from *ox* and *heal*; *helleboti nigri radix.*] A plant. *Ainsw.*

To OXIDATE. *v. a.* To convert into an oxide. See OXYDATION.

OXIDATES, a Persian, whom Darius condemned to death; but Alexander having taken him prisoner, made him afterwards governor of Media. *Q. Curt.* l. 3, c. 3.

OXIDATION, *n. s.* See CHEMISTRY, *Index*; and OXYDATION.

OXIDES, *n. s.* See CHEMISTRY, *Index*; and OXYD.

To OXIGENATE, *v. a.* To combine with oxigene.

(1.) OXIGENATED. *part. adj.* combined with oxigene. See OXYGEN.

(2.) OXIGENATED MURIATES. See CHEMISTRY, *Index.*

(3.) OXIGENATED MURIATIC ACID. See ACID. CHEMISTRY, *Index*; and MURIATIC, § 3.

OXIGENATION, *n. s.* The combination of an acid with oxigene. See CHEMISTRY, *Index.*

OXIGENE, or OXIGENOUS GAS, See CHEMISTRY, *Index*, and OXYGEN.

OXIGENOUS PRINCIPLE. See CHEMISTRY, *Index.*

OXIMES, an ancient people of European Sarmatia.

OXIONIÆ, an ancient nation of Germany, reported to have had human faces, but bodies like brutes. This fable is mentioned by Tacitus; *De Germ.* 46.

(1.) * OXLIP. *n. s.* [from *ox* and *lip*; *veris prima*, Latin.] The same with *cowslip*, a vernal flower.

A bank whereon the wild thyme blows,
Where *oxlip* and the nodding violet grows.
Shak.

(2.) OXLIP, or COWSLIP. See PRIMULA, N° 3.

OXMANTOWN. See DUBLIN, N° II. § 3.

OXNA, a small inhabited island of Shetland, in the parish of Tingwall; 4 miles W. of Scalloway. Lon. 0. 32. W. Lat. 60. 9. N.

(1.) OXNAM, a parish of Scotland, in Roxburghshire, on the borders of England, anciently called OXENHAM; 9½ miles long, from N. to S. and nearly 5 broad where broadest; but in one place it is only two miles broad. In figure, it resembles the form of the kingdom of Scotland. The Kail, the Coquet, and the Oxnam, run through it, and the Jed runs along its W. boundary for 2 miles. The surface is hilly and partly bleak; but interspersed with beautiful green hills and fertile fields. The air is moist, but healthy; the soil various, proper both for agriculture and pasture, and produces all the usual crops. The total number of acres is 20,500. Husbandry is much improved. The population, in 1793, was 690; decrease 78, since 1755. The number of sheep was 13,000; of horses, 161; and black cattle, 449. There are relics of 3 ancient forts; the walls of the tower at Dolphiston are from 8 to 10 feet thick, built of hewn stone and very closely cemented. The Roman road, which reaches to Boroughbridge in Yorkshire, is the E. boundary of the parish, and runs the whole length of it.

(2.) OXNAM, a river in the above parish, which rises two miles from the S. end of it, runs through it past the village (N° 3.), and after a course of 11½ miles, wherein it has many beautiful windings, falls into the Tiviot, half a mile below Crailing.

(3.) OXNAM, a village in the above parish, anciently much more populous than at present.

OXNEY; 1. an island of Kent, formed by the Rother, near Appledore: 2. a town of Northamptonshire, near Peterborough.

OXONIA, or OXONIUM, } the classical name of OXFORD. From its pleasant situation, it was called by Antoninus, *Bellositum*, and CALLEVA.

* OXSTALL. *n. s.* [*ox* and *stall.*] A stall for oxen.

OXTON, 4 small towns; 1. in Cheshire, between the Upton and the Mersey: 2. in Devonshire near Exmouth: 3. and 4. in Yorkshire, near Tadcaster, and Kilham.

(1.) * OXTONGUE. *n. s.* [*buglossa.*] A plant. *Ainsw.*

(2.) OX-TONGUE, in botany. See PICRIS.

OXUCLÆ, in natural history, [from ὀξυς, sharp, and κλειω, a column,] a genus of fossils of the class of selenitæ, but of the columnar, not the rhomboidal, kind. Of this genus there are only two known species: 1. A fine kind with flakes and transverse filaments, found in the clayey banks of the river Nen, near Peterborough in Northamptonshire; and, 2. A dull kind with thick plates and longitudinal filaments. This is common in Yorkshire, and lies sometimes in a yellow and sometimes in a blue clay.

OXUS, or JIHUN, a large river of Asia, much taken notice of in ancient histories, but it does not rise in the north of India, as most writers affirm; for, according to the best and latest maps made by those who have been upon the spot, it runs a course of about 260 miles from the Caspian Sea to the lake Aral, whose dimensions have lately been discovered, and is but very lately known to the Europeans;

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Europeans; but, as it passes through a desert country abounding with sands, the inhabitants so diverted its course, that the old channel can hardly be discovered. Mr Lempriere says, it is now called *Gibon*.

(1.) OXWICH, a town of Norfolk, near Rainham Hall.

(2.) OXWICH-POINT, a cape of Wales, on the S. coast, in Bristol Channel. Lon. 4. 6. W. Lat. 51. 27. N.

OXYARES, a king of the Bactrians, who was conquered by Alexander the Great.

(1.) * OXYCRATE. *n. s.* [ὀξυκρατον, *oxycrat*, Fr. ὀξυς and κρασις.] A mixture of water and vinegar.—Apply a mixture of the same powder, with a compress prest out of *oxycrate*, and a suitable bandage. *Wiseman.*

(2.) OXYCRATE, in pharmacy, is used to assuage, cool, and refresh. The usual proportion is one spoonful of vinegar to 5 or 6 spoonfuls of water.

OXYD, or OXIDE, *n. s.* a term used in the new chemical nomenclature to express a very numerous class of bodies, formed by the union of certain bases with a smaller proportion of oxygen than is necessary for their conversion into acids. (See OXYGEN.) The most remarkable of these bodies are what were formerly called *metallic calces*, and have for their base some metallic substance. It is in this state that metals are contained in their ores, from which they are extracted, and converted into the metallic form by the process called *reduction*. Metals are converted into oxyds by combustion, and by solution in acids; any many of them assume this form from the action of the atmosphere alone, but more readily when this is assisted by moisture. During their conversion into oxyds, metals lose their splendor, and, acquiring a considerable increase of absolute weight, put on an earthy, pulverulent appearance. The term oxyd, however, is not confined to the combination of metals with oxygen, but expresses that first degree of oxygenation in all bodies which, without converting them into acids, causes them to approach to the nature of salts; and of these there is a prodigious variety; as the oxyd of phosphorus, which is the white concrete substance into which that body is converted by combustion; the oxyd of azote, or nitrous air of Dr Priestley; and many others. Most of the oxyds from the vegetable and animal kingdoms have bases compounded of different simple combustible bodies. Thus sugar, all the gums, mucus, and starch, are vegetable oxyds; the bases of which are hydrogene and carbon, combined in various proportions. We find accordingly, that all these bodies are, by farther additions of oxygen, convertible into acids; and it is probable that these acids differ from each other only in the proportion of the hydrogen and carbon in their bases. The bases of the animal oxyds are still more complicated; all, or most of them, consisting of various combinations of azote, phosphorus, hydrogen, carbon, and sulphur. See CALX, CHEMISTRY, and TABLE of CHEMICAL NOMENCLATURE. Dr Thomson in his *System of Chemistry*, prefers the French orthography of this word, *oxide*, although in all the other new terms derived from ὀξυς, as *oxygene*, *oxy muriat*, &c. he adopts the Greek orthography with Y.

To OXYDATE, *v. a.* To convert into a calx or oxyd. See the last and next articles.

OXYDATION, a term applied by modern chemists to express the process by which bodies are converted into oxyds; and it is allowed on all hands to be exactly similar to combustion. The nature of this process has been much disputed; and the question involves in it great part of the controversy between the followers of Stahl and the celebrated Lavoisier, the founders of the phlogistic and antiphlogistic theories, which for some years divided the chemical world. But the latter doctrine has now completely triumphed, and the former is quite exploded. See CALCINATION, CHEMISTRY, COMBUSTION, INFLAMMATION, and PHLOGISTON.

OXYDRACÆ, an ancient warlike nation of India, who confederated with the *Catheri* and *Malli* against the invasion of Alexander the Great; but were defeated. See INDIA, § 4.

(1.) OXYGEN, *n. s.* a term used in the new chemical nomenclature to express the acidifying principle; from ὀξυς, *acid*, and γενομαι, *to generate*. It is not found naturally in a separate state, but always combined or mixed with some other substance. In its aeriform or elastic state, it is called by the French chemists *oxygenous gas*, and is the same as the *dephlogisticated air* of Priestley and Cavendish, the *empyreal air* of Scheele, the *vital air* and *pure air* of other modern chemists. It was called *dephlogisticated* by the followers of Stahl's doctrine, who imagined it to be the air deprived of phlogiston; the epithet of *empyreal* was given to it by Mr Scheele, who first discovered it to be the only part of the atmosphere which contributes to support inflammation or combustion. He made many curious experiments on inflammation, and was the first who completely analyzed common air, showing it to consist of 27 parts of empyreal, 72 of foul, and 1 of fixed air. He found, that these 27 parts only were consumed by a burning body; and that these, during the act of combustion, were united and combined with the inflammable body burnt in them, so as to form a compound no longer combustible. Lavoisier, extending these experiments, found that the body thus produced by empyreal air, being combined with the matter of the inflammable body burnt in it, was, in many cases, an acid; in consequence of which property, he gave this air the name of *oxygene*, i. e. "the generator of acidity." He was perhaps too hasty in adopting this name; for the same air is found in combination with inflammable matter, forming compounds that are by no means acid, of which we shall content ourselves with producing only one example, namely WATER, which is the compound resulting from the combination of this air with inflammable air. See CHEMISTRY, *Index*. Common atmospheric air was found by Scheele to promote animal life in a manner somewhat similar to its promoting combustion. He extended his experiments to this subject also; and he concluded that this empyreal air is the only part of the atmosphere which is capable of supporting

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ſupporting animal life, and that no animal can exiſt a minute without it. In conſequence of this property it has been called *vital air*. Since, however, it is abſolutely neceſſary for the ſupport both of combuſtion and of animal life, and ſince neither of theſe can exiſt without it, both the terms *empyreal* and *vital* are deficient, expreſſing only certain properties of this elaſtic fluid (which may alſo be ſaid of the word *oxygene*); and hence ſome later chemiſts have ſuggeſted the propriety of deſigning it by the name of *pure air*. See AIR, CHEMISTRY, *Index*; COMBUSTION, INFLAMMATION, &c.

(2.) OXYGENE, METHODS OF PROCURING. Dr Thomſon, (in his *Syſt. of Chem.* Vol. I. p. 17—19. propoſes two methods for procuring this gas: viz. I. "Take a quantity of nitre, and put it into a gun barrel, A, *Fig.* 1. (*Plate* CCLXV.) the touch-hole of which had been previouſly cloſed up with metal. This barrel is to be bent ſo, that while the cloſe end, in which the nitre lies, is put into the fire E, the open end may be plunged below the ſurface of the water, with which the veſſel B is filled. The glaſs jar D, previouſly filled with water, is placed on the ſupport C, lying at the bottom of the veſſel of water B, ſo as to be exactly over the open part of the gun-barrel A. As ſoon as the nitre becomes red-hot, it emits a quantity of air, which, iſſuing from the end of the gun-barrel, aſcends to the top of the glaſs jar D, and gradually diſplaces all the water. The glaſs jar D then appears to be empty, but is in fact filled with air. It may be removed in the following manner: Slide it away a little from the gun-barrel and the ſupport, and then dipping any flat diſh into the water below it, raiſe it on the diſh, and bear it away. The diſh muſt be allowed to retain a quantity of water in it to prevent the air from eſcaping. (See *Fig.* 2.) Another jar may then be filled with air in the ſame manner; and this proceſs may be continued, either till the nitre ceaſes to give out air, or till as many jarfuls have been obtained as are required. This method of obtaining and confining air was firſt invented by Dr Mayow, and afterwards much improved by Dr Hales. The ſtone-ware retort (*fig.* 3.) may be uſed inſtead of the gun-barrel. All the airs obtained by this or any other proceſs, differing from the air of the atmoſphere, have, to diſtinguiſh them from it, been called *gaſes*." (See GAS.) II. "Oxygen gas may alſo be obtained thus:—D (in *fig.* 4.) repreſents a wooden trough, the inſide of which is lined with lead or tinned copper. C is the cavity of the trough, which ought to be a foot deep. It is to be filled with water at leaſt an inch above the ſhelf AB, which runs along the inſide of it; about 3 inches from the top. In the body of the trough, which may be called *the ciſtern*, the jars deſtined to hold gas are to be filled with water, and then to be lifted; and placed inverted upon the ſhelf at B. This trough, which was invented by Dr Prieſtley, has been called by the French chemiſts, the *pneumato-chemical*, or ſimply the *pneumatic apparatus*, and is extremely uſeful in all experiments in which gaſes are concerned. Into the glaſs veſſel E put a quantity of the black oxide of maganeſe in powder, and pour over it as much of that liquid which in commerce is called *oil of vitriol*, and in chemiſtry *ſulphuric acid*, as is ſufficient to form the whole into a thin paſte. Then inſert into the mouth of the veſſel the glaſs tube F, ſo cloſely that no air can eſcape except through the tube. This may be done by covering the joining with a little putty, and then laying over it ſlips of bladder or linen dipped in glue, or in a mixture of the white of eggs and quick-lime. The whole muſt be made faſt with a cord. The end of the tube F is then to be plunged into the pneumatic apparatus D, and the jar G, previouſly filled with water, to be placed over it on the ſhelf. The whole apparatus being then fixed in that ſituation, the glaſs veſſel E is to be heated by means of a lamp or a candle. A quantity of oxygen gas runs along the tube F, and fills the jar G. As ſoon as the jar is filled, it may be ſlid to another part of the ſhelf, and other jars ſubſtituted in its place, till as much gas has been obtained as is wanted. Both theſe methods were diſcovered by Scheele." See CHEMISTRY, *Index*.

(3.) OXYGEN, PROPERTIES AND PHENOMENA OF. 1. "Oxygen gas" (continues Dr Thomſon) "is colourleſs and inviſible like common air. Like it, too, it is elaſtic, and capable of indefinite expanſion and compreſſion. 2. If a lighted taper be let down into a jar of oxygen gas, it burns with ſuch ſplendour, that the eye can ſcarcely bear the glare of light, and produces a much greater heat than when burning in common air." 3. "Animals live much longer in it than in the ſame quantity of common air." (The Dr adduces many experiments made with ſparrows, in proof of this.) 4. "Atmoſpherical air contains between 20 and 30 parts in 100 of oxygen gas; and no ſubſtance will burn in common air previouſly deprived of all the oxygen gas which it contains. But combuſtibles burn with great ſplendor in oxygen gas. Oxygen gas, then, is abſolutly neceſſary for combuſtion. 5. It has been proved alſo by many experiments, that no breathing animal can live for a moment in any air or gas which does not contain oxygen mixed with it. Oxygen gas, then, is abſolutely neceſſary for reſpiration." The ſpecific gravity, combinations, and many other properties and phenomena of oxygen, are enumerated under CHEMISTRY. We need, therefore, only quote farther from Dr Thomſon, the table or ſeries of its affinities, as far as they have yet been aſcertained, viz. "Charcoal, Maganeſe, Zinc, Iron, Tin, Antimony, Hydrogen, Phoſphorous, Sulphur, Arſenic, Azot, Nickel, Cobalt, Copper Biſmuth, Mercury, Silver, Oxide of Arſenic, Nitrous Gas, Gold, Platinum, Muriatic Acid, White oxide of Manganeſe, White oxide of Lead."

To OXYGENATE. *v. a.* To combine any ſubſtance with oxygen.

OXYGENATED. *part. adj.* combined with Oxygen.

OXYGENATED MURIATIC ACID. See ACID, CHEMISTRY, *Index*; and MURIATICK, § 3.

OXYGENATION. See OXYGENATION.

OXYGLYCU. *n. ſ.* a ſpecies of drink, prepared of the ſweeteſt honey-combs macerated and boiled. The combs from which all the honey has been expreſſed, are put into a pot with pure water, and boiled till they ſeem to have depoſited all their contained honey in the water. This li-

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quor is to be kept, and when diluted with cold water, is to be drank in the ſummer-time, in order to remove thirſt.

OKYGLYCUS Cerasus, a name given by the editor of *Daniel's hiſtory of* Dahomy, to a very extraordinary fruit, produced in that country and other parts of Africa. It reſembles a ſmall olive in every reſpect but colour; being of a duſky reddiſh hue, changing at the end next the ſtalk to a faint yellow. The pulp is firm, and almoſt inſipid; the ſtone is hard like that of the olive. After having chewed one or more of theſe berries, and ſwallowed or ſpit out the pulp, a glaſs of vinegar taſtes like ſweet wine; a lime ſeems to have the flavour of a ripe China orange; and a ſimilar change is produced on other acids; the ordinary effects of which upon the palate are deſtroyed in a moſt unaccountable manner without effervescence, or any perceptible motion. The effect, indeed, is very different from neutralization by the mixture of an acid and alkali; ſuch combination producing a neutral ſalt, while this *miraculous berry* ſeems to metamorphoſe acids into ſweets. Food, or drink, not containing any acid, ſuffers no change, by the previous uſe of this fruit: Its effect upon acids continues, even after a meal, though in a ſmaller degree. The natives uſe it to render palatable a kind of gruel called *guddoe*, which is made of bread after it becomes too ſtale. They deſcribe it as the fruit of a large tree. Mr Daniel raiſed plants 6 or 7 inches high from this fruit, and tried to carry them from Angola, to the Botanic garden at St Vincent's; but they periſhed in the paſſage. He preſerved the berries in ſpirits, in ſyrup, and in a dry form: but they loſt their wonderful property in all theſe preparations. The plant is an evergreen, and the leaves reſemble thoſe of the olive.

OKYLUS, one of the generals of the Heraclidæ, when they recovered the Peloponneſus. He became king of Elis. *Pauſ.* v. c. 4.

(1.) * OXYMEL. *n. ſ.* [ὀξυμελι, ὀξυς and μελι.] A mixture of vinegar and honey.—In fevers, the aliments preſcribed by Hippocrates, were ptiſans and decoctions of ſome vegetables, with *oxymel* or the mixture of honey and vinegar. *Arbuthnot.*

(2.) Oxymel. See Pharmacy, *Index.*

(3.) * OXYMORON. *n. ſ.* [ὀξυμωρον.] A rhetorical figure, in which an epithet of a quite contrary ſignification is added to any word.

(2.) Oxymoron. See Oratory, § 229.

OXY-MURIAT. *n. ſ.* a ſalt formed by the combination of the Oxy-Muriatic Acid, with different baſes. "Though the oxy-mutiatic acid was diſcovered" (ſays Dr Thomſon) by Scheel, it was not till 1786, that Berthollet diſcovered the poſſibility of combining it with different baſes, and forming that claſs of ſalts now named *Oxymuriats*. Theſe ſalts cannot be formed by diſſolving the different baſes in the acid, while liquid, in conſequence, perhaps, of the ſtrong affinity it has for water; but may be eaſily formed by the following proceſs: Diſſolve the baſe which is to be combined with the acid, or its carbonate, in water, or mix it with water if it be inſoluble, and, putting it into one of Woulfe's bottles," (See Chemistry, *Index*,) "cauſe oxymuriatic acid, in the ſtate of gas, diſtilled in the uſual manner, to paſs through it. The acid combines with the baſe, and (if a carbonate be uſed) an effervescence takes place, owing to the diſengagement of the carbonic acid gas. As the baſe becomes ſaturated with acid, the oxy-muriat gradually precipitates in the ſtate of cryſtals. At the ſame time with the oxy-muriat a quantity of common muriat is formed; but it may be eaſily ſeparated, by diſſolving the ſalt in a ſmall quantity of boiling water, and allowing it to cool; the greater part of the oxy-muriats fall down in cryſtals, whereas the other ſalt remains in ſolution."—"The oxy-muriats may be diſtinguiſhed by the following properties: 1. When heated moderately they give out a great quantity of oxygen gas, and are converted into common muriats. 2. When mixed with combuſtibles, they detonate with much greater violence than the nitrates. This detonation is occaſioned, not only by heat, but by friction and percuſſion, and often takes place ſpontaneouſly. 3. Soluble in water, and capable of cryſtallizing when the ſolution cools.—The greater number of them have been but ſlightly examined; owing probably to the difficulty of forming them rapidly. Some of them, however, have been introduced into the proceſs of bleaching with much advantage. And thoſe of them which are already known have given riſe to ſome of the moſt brilliant and aſtoniſhing experiments exhibited in chemiſtry." *Syſt. of Chem.* vol. II. p. 336–338. Dr Thomſon enumerates four ſpecies of oxy-muriats, already known; beſides the

1. "Oxy-muriat of Barytes," which (he ſays) "is ſtill unknown. Fourcroy has aſcertained, that when oxy-muriatic acid gas is received, containing water and carbonate of barytes, the barytes is gradually diſſolved, and the carbonic acid emitted; oxy-muriat of barytes in that caſe was no doubt formed.

2. "Oxy-muriat of lime may be prepared by the common proceſs. Its properties have not been examined, but it has been ſubſtituted by Mr Tennant of Glaſgow for oxy-muriat of potaſs, in bleaching, and is ſaid to anſwer the purpoſe completely. The oxy-muriat of potaſs had ſucceeded with the paper-makers, but the bleachers of linen did not find it to anſwer. The oxy-muriat of lime is prepared in the uſual manner, by means of chalk, and is uſed by the bleachers in a liquid form. It is ſaid, however, to be now prepared for them in conſiderable quantities, and ſold in a dry ſtate.

3. "Oxy-muriat of Potass. This extraordinary ſalt, firſt formed by Berthollet, has been ſince examined by a great number of chemiſts. Lavoisier, Dolfuz, Van Mons, Fourcroy, Vauquelin, Hoyle, &c. have inveſtigated its properties, and diſcovered many of the ſingular effects it produces." Dr Thomſon adds in a note, that "it was in fact firſt diſcovered by Dr Higgens, who deſcribed the method of forming it, and ſome of its properties ſome time before Berthollet, under the name of ſaltpetre."—"It is prepared by diſſolving one part of carbonate of potaſs in 6 parts of water; putting the mixture into Woulfe's bottle, and ſaturating the potaſs with oxy-muriatic acid gas. When the ſaturation is nearly completed, the oxy-muriat falls down in cryſtals. It

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may be purified by solution in boiling water. As the water cools, the pure oxy-muriat crystallizes. The crystals are to be dried between folds of blotting paper. According to Hauy, the primitive form of the crystals is an obtuse rhomboidal prism. But it is usually obtained in small thin plates, of a silvery whiteness. It is only by allowing an unsaturated solution of it in boiling water to cool slowly, or by exposing a solution in cold water to spontaneous evaporation, that it is obtained in large regular rhomboidal crystals. Its taste is cooling, austere, and disagreeable, somewhat analogous to that of nitre. Its specific gravity is 1·989. When rubbed smartly, it phosphoresces, or rather emits a number of sparks of fire. It is soluble in 17 parts of water, at the temperature of 60°, and in 2¼ parts of boiling water. It is not sensibly altered by exposure to the air. When heated, it readily undergoes the watery fusion. If the heat be continued, it boils, and gives out about the 3d of its weight of oxygen gas. From this salt oxygen gas can be obtained in the greatest purity. After the effervescence is over, there remains common muriat of potash. According to Fourcroy, it is composed of 67 parts muriat of potash, and 33 oxygen. The most astonishing properties are those which it exhibits, when mixed with combustibles. All combustible substances whatever are capable of decomposing it, and, in general, the decomposition is attended with violent detonations. When 3 parts of this salt and one part of sulphur are triturated in a mortar, the mixture detonates violently: the same effect is produced when the mixture is placed upon an anvil, and struck smartly with a hammer. Nay, it even sometimes detonates spontaneously, without any perceptible friction, and ought not therefore to be kept ready mixed. Charcoal produces the same effects, though not so violent. This property induced Berthollet to propose it as a substitute for gun-powder. The attempt was made at Essone in 1788; but no sooner had the workmen begun to triturate the mixture of charcoal, sulphur, and oxy-muriat, than it exploded with violence, and proved fatal to Mr *Letors* and Mademoiselle *Chevraud*. The force of this gun-powder, when it is prepared, is much greater than that of the common sort; but the danger of preparing it, and even of using it after it is prepared, is so great that it can hardly ever be substituted with advantage for common gun-powder. Phosphorus also detonates with this salt, either by trituration or percussion. The quantities of each used ought not to exceed half a grain, or at most a grain, otherwise the experiment may be attended with some danger. It detonates also, when treated in the same way, with almost all the metals, and with cinnabar, pyrites, sugar, gums, oils, alcohol, &c. When thrown upon platinum heated to whiteness, it does not detonate; but sublimes. The surface of the platinum, however, is oxidated; for acetous acid dissolves part of it, and when the prussiat of lime is poured into the solution, the liquid becomes of a greenish-white colour. The acids decompose it, and expel the oxy-muriatic acid in a state of such condensation, that it acts instantaneously upon all combustibles which come in its way, and occasion astonishingly rapid and brilliant combustions. When sulphuric acid is poured upon it, a detonation takes place, a red flame is emitted, and a strong colour of oxy-muriatic acid is exhaled. If sulphuric acid be poured upon a mixture of this salt and sulphur, charcoal or the metals, or oil of turpentine, or almost any combustible, a very brilliant flame is emitted. When this salt is triturated in a mortar with a little cotton cloth, small repeated explosions are heard, similar to the crack of a whip; and if the cotton be dry and warm, it sometimes takes fire. It always does so, when, after the trituration has been continued for some time, sulphuric acid is poured upon the cotton. When nitric acid is poured upon this salt, the oxy-muriatic acid is disengaged, but without any detonation or flame. When this acid is poured upon a mixture of oxy-muriat of potash and phosphorus, flakes of flame are emitted at intervals for a considerable time. The theory of these explosions was first pointed out by Berthollet. The oxygen of the oxy-muriatic acid combines with the combustible, and at the same time lets go a quantity of caloric; and trituration or percussion acts merely by bringing the particles which combine within the sphere of each others attraction. This salt was employed in BLEACHING, after the discovery of the whitening property of oxy-muriatic acid: but other compounds have been lately substituted in its place."

4. "OXY-MURIAT of SODA, has not hitherto been examined. From the experiments of Dolfuz and Godolin, we learn, that it may be formed by the same process as oxy-muriat of potash; that it crystallizes in prisms; that it detonates on red hot coals, and that it precipitates sulphate of iron brown.

5. "OXY-MURIAT of STRONTIAN was first formed by Messrs Davy and Clayfield. The combination only succeeds when oxy-muriatic gas is passed through a saturated boiling solution of strontian in water. When the strontian is saturated, the solution has a dusky orange colour. It yields crystals with difficulty, in consequence of the great solubility of the oxy-muriat. By great evaporation and cooling, fine needle-form crystals are obtained. Alcohol dissolves them and burns with a red flame. They detonate slightly with phosphorus and charcoal. When sulphuric acid is poured into the solution of this salt in water, a vivid light is emitted, and a great increase of temperature takes place; but no light appears when the acid is poured upon the dry salt.

(1.) OXY-MURIATIC ACID, an acid composed of Muriatic Acid and Oxygen. "It may be be procured," (says Dr Thomson *Syst. Chem.* Vol. II. p. 67—75.) "by the following process. Put into a glass matrass a mixture of 3 parts common salt, and one part of the black oxide of manganese. From this matrass a bent glass must pass, either into water previously boiled and still warm, or, which is better, into a mercurial trough; and glass jars, filled with water or mercury, must be inverted over the end of the tube to receive the product. When the apparatus is fully prepared, two parts of concentrated sulphuric acid, (previously diluted with rather more than half its weight of water, else the matrass cracks,) are to be poured into

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into the matrafs, and the aperture inſtantly cloſed. A violent effervescence enſues, and a great quantity of gas iſſues from the tube. This gas is *oxy-muriatic Acid*. This acid was diſcovered by Scheele, in 1774, during his experiments on manganeſe. He gave it the name of *Dephlogiſticated Muriatic Acid*, from the ſuppoſition that it is muriatic acid deprived of its phlogiſton." (See DEPHLOGISTICATED.) "The French Chemiſts, after its compoſition had been aſcertained, called it *oxygenated muriatic Acid*;" (See ACID, OXYGENATED,) which unwieldy appellation Kirwan has happily contracted into *Oxy-muriatic*. The properties of this acid pointed out by Scheele were ſo peculiar, that it immediately attracted attention; and the moſt diſtinguiſhed chemiſts haſtened with emulation to enter upon a field which promiſed ſo rich a harveſt of diſcoveries; Bergmen, Pelletier, Berthollet, Hermſtadt, Morveau, Fourcroy, Scopoli, Weſtrum, &c. ſucceſsfully examined its properties, and aſcertained its action on other bodies. The true theory of the formation and compoſition of this acid, which was firſt given by Berthollet, will appear from the following facts: The *black* oxide of manganeſe is, during the proceſs, converted into *white* oxide, and muſt therefore have given out a quantity of oxygen. When oxy-muriatic acid, diſſolved in water, is preſented to the light in a veſſel half empty, oxygen gas is diſengaged and floats above, and the acid is converted into common muriatic acid; conſequently oxy-muriatic acid, is compoſed of muriatic acid and oxygen.

(2.) OXY-MURIATIC ACID, PROPERTIES AND PHENOMENA OF THE. "Oxy-muriatic acid gas is of a yellowiſh green colour. Its odour is intolerably acid and ſuffocating. It cannot be breathed without proving fatal. The death of the ingenious and induſtrious PELLETIER, whoſe chemical labours have been ſo uſeful to the world, was occaſioned by his attempting to reſpire it. A conſumption was the conſequence of this attempt, which ſoon proved fatal. When atmoſpheric air containing a mixture of it is breathed, it occaſions a violent and almoſt convulſive cough, attended with much pain in the cheſt. This cough uſually continues to return at intervals for a day or two, and is accompanied with a copious expectoration. It is more capable of ſupporting combuſtion than common air. When a burning taper is plunged into it, the flame is diminiſhed and acquires a very red colour; a great quantity of ſmoke is emitted, and the taper conſumes much more rapidly than in common air. The facility with which bodies take fire in this gas is owing to the eaſe with which it parts with its oxygen. This gas is neither altered by expoſure to light nor to caloric. It paſſes unaltered through red-hot porcelain tubes. It does not unite readily with water. Scheele found, that after ſtanding 12 hours over water $\frac{4}{5}$ths of the gas were abſorbed; the remainder was common air. Berthollet ſurrounded ſeveral bottles containing it with ice: as ſoon as the water in theſe bottles was ſaturated, the gas became concrete, and ſunk to the bottom of the veſſels; but the ſmalleſt heat made it riſe in bubbles, and endeavour to eſcape in the form of gas. Weſtrum obſerved, that it became ſolid when expoſed in large veſſels to the temperature of 40°; and that then it exhibited a kind of cryſtalization. The ſpecific gravity of water, ſaturated with this gas at the temperature of 45°, is 1·603. Water impregnated with this gas is uſually named *oxy-muriatic acid*. It has a pale greeniſh-yellow colour, and a ſuffocating odour like the gas; its taſte is not acid but aſtringent. It is prepared by cauſing the gas to paſs through a ſucceſſion of Woulfe's bottles nearly filled with pure water. Light decompoſes this acid, as Berthollet diſcovered, though it has no action on the gas. It renders vegetable colours *white*, and not *red*, as other acids do: and the colour thus deſtroyed can neither be reſtored by acids nor alkalies. It has the ſame effects on yellow wax. If the quantity of vegetable colours to which it is applied be ſufficiently great, it is found reduced to the ſtate of common muriatic acid. Hence it is evident, that it deſtroys theſe colours by parting with its oxygen. This property has rendered it a very important article in BLEACHING. Oxy-muriatic acid is not altered by oxygen gas, nor by azotic gas; but all the other ſimple combuſtibles are capable of decompoſing it. Hydrogen produces no alteration in this acid gas, as long as the mixture continues cold; but when it is made to paſs through a red-hot porcelain tube, a violent detonation takes place. When melted ſulphur is plunged into it, inflammation alſo takes place, and the ſulphur is converted into ſulphuric acid; but cold ſulphur, though partly acidified by this gas, does not take fire in it. When phoſphorus is plunged into this gas, it immediately takes fire, burns with great ſplendor, and is converted into phoſphoric acid. Sulphurated, phoſphorated, and carbonated hydrogen gas, decompoſe this acid, but none of them, except phoſphorated hydrogen, produce ſpontaneous inflammation with it. Oxy-muriatic acid oxidates all the metals without heat. Several of them even take fire as ſoon as they come into contact with it. All that is neceſſary is to throw a quantity of the metal reduced to a fine powder into a veſſel filled with the gas. The inflammation takes place immediately; the metal is oxidated, while the acid, decompoſed and reduced to common muriatic acid, combines with the oxide, and forms a muriat. Arſenic burns in oxy-muriatic acid gas with a blue and green flame; bifmuth with a lively bluiſh flame; nickel, with a white flame bordering on yellow; cobalt, with a white flame, approaching to blue; zinc, with a lively white flame; tin, with a feeble bluiſh flame; lead, with a ſparkling white flame; copper and iron, with a red flame. Several metallic ſulphurets, as cinnabar, realgar, ſulphuret of antimony, take fire when in powder into this gas. When oxy-muriatic acid gas and ammoniacal gas are mixed together, a rapid combuſtion, attended with a white flame, inſtantly takes place; both the gaſes are decompoſed, water is formed, while azotic gas and muriatic acid are evolved. The ſame phenomena are apparent, though in a ſmaller degree, when liquid ammonia is poured into the acid gas. The ſame decompoſition takes place though both acid and alkali be in a liquid ſtate. If 4-5ths of a glaſs tube be filled with oxy-muriatic acid, and the

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the remaining 5th with ammonia, and the tube be then inverted over water, an effervescence enfues, and azotic gas is extricated. This acid combines with fixed alkalies, earths, and feveral metallic oxides, and forms with them falts of a very peculiar nature, named *Oxy-muriats*." (See OXY-MURIAT, N° 1—5.) "As thefe combinations cannot be made directly with liquid oxy-muriatic acid, it has been impoffible to afcertain the affinities of this acid. Oxy-murjatic acid gas reddens nitrous gas and converts it into nitrous acid. It produces no effect upon any of the acids hitherto defcribed, except the SULPHUROUS and PHOSPHOROUS, which it converts into SULPHURIC and PHOSPHORIC." Dr Thomfon mentions fome experiments of Mr Lambe, to procure oxy-muriat of iron; but as thefe experiments, when repeated by Meffrs Vauquelin, Guyton-Morveau, and Bouhlon-Lagrange, with every poffible precaution, did not produce a fingle particle of that oxy-muriat, we need not quote them. The Doctor concludes with remarking, that "Oxy-muriatic acid is one of the moft important, and fortunately one of the eafieft procured, of all the acids. It is employed with great advantage in BLEACHING, and in a great variety of chemical proceffes."

(3.) OXY-MURIATIC ACID, USE OF, IN BLEACHING. This acid is the principal agent in the new procefs of bleaching. (See BLEACHING, PART II.) But till very lately, perhaps with many ftill, the bleachers were in the practice of adding fome alkali to the acid, notwithftanding the ftrong objections which M. Bertholet made to that addition, and notwithftanding the proofs urged by Mr Rupp, that it increafes the expenfe of bleaching about 40 per cent. The chief reafon for perfifting in a practice to which fuch objections were urged was, that the addition of the alkali deprives the liquor of its fuffocating effects, without deftroying its bleaching powers. Mr Rupp, however, has contrived the following apparatus, in which may be fafely ufed the pure oxy-muriatic acid fimply diffolved in water, which is at once its cheapeft and beft vehicle. *Fig.* 1. *Plate* CCLXV. is a fection of the apparatus. It confifts of an oblong deal ciftern ABCD, made water-tight. A rib EE of afh or beech wood is firmly fixed to the middle of the bottom CD, being mortifed into the ends of the ciftern. This rib is provided with holes at FF, in which two perpendicular axes are to turn. The lid AB has a rim GG, which finks and fits into the ciftern. Two tubes HH are fixed into the lid, their centres being perpendicularly over the centres of the fockets FF when the lid is upon the ciftern. At I, is a tube by which the liquor is introduced into the apparatus. As it is neceffary that the fpace within the rim GG be air-tight, its joints to the lid, and the joints of the tubes, muft be very clofe; and, if neceffary, fecured with pitch. Two perpendicular axes KL, made of afh or beech wood, pafs through the tubes HH, and reft in the fockets FF. A piece of ftrong canvas M is fewed very tight round the axis K, one end of it projecting from the axis. The other axis is provided with a fimilar piece of canvas. N N are pieces of cloth rolled upon the axis L. Two plain pulleys OO are fixed to the axis, in order to prevent the cloth from flipping down. The fhafts are turned by a moveable handle R. Q is a moveable pulley, round which paffes the cord R. This cord, which is fattened on the oppofite fide of the lid (fee *fig.* 2.), and paffes over the fmall pulley S, produces friction by means of the weight T. By the fpigot and fauffet V, the liquor is let off when exhaufted. The dimenfions of this apparatus are calculated for the purpofe of bleaching twelve or fifteen pieces of four fourth calicoes, or any other ftuffs of equal breadth and fubftance. When the goods are ready for bleaching, the axis L is placed on a frame in an horizontal pofition, and one of the pieces N being fattened to the canvas M by means of wooden fkewers, in the manner reprefented in *fig.* 1. it is rolled upon the axis by turning it with the handle P. This operation muft be performed by two perfons; the one turning the axis and the other directing the piece, which muft be rolled on very tight and very even. When the firft piece is on the axis, the next piece is fattened to the end of it by fkewers, and wound on in the fame manner as the firft. The fame method is purfued till all the pieces are wound upon the axis. The end of the laft piece is then fattened to the canvas of the axis K. Both axes are afterwards placed into the ciftern, with their ends in the fockets FF, and the lid is put on the ciftern by paffing the axis through the tubes HH. The handle P is put upon the empty axis, and the pully Q upon the axis on which the cloth is rolled, and the cord R, with the weight T, is put round it and over the pully S. The ufe of the friction, produced by this weight, is to make the cloth wind tight upon the other axis. But as the effect of the weight will increafe as one cylinder increafes and the other leffens, Mr Rupp recommends that 3 or 4 weights be fufpended on the cord, which may be taken off gradually as the perfon who works the machine may find it convenient. As the weights hang in open hooks, which are fattened to the cord, it will be little or no trouble to put them on and remove them. Things being thus difpofed, the bleaching liquor is to be tranfferred from the veffels in which it has been prepared into the apparatus, by a moveable tube paffing through the tube I, and defcending to the bottom of the ciftern. This tube being connected with the veffels, by means of leaden or wooden pipes provided with cocks, hardly any vapours will efcape in the tranfifer. When the apparatus is filled up to line *a a a*, the moveable tube is to be withdrawn, and the tube I clofed. As the liquor rifes above the edge of the rim G, and above the tubes HH, it is evident that no evaporation can take place, except where the rim does not apply clofely to the fides of the box; which will, however, form a very trifling furface if the carpenter's work be decently done. The cloth is now to be wound from the axis L upon the axis K, by turning this; and when this is accomplifhed, the handle P and pully Q are to be changed, and the cloth is to be wound back upon the axis L. This operation is, of courfe, to be repeated as often as neceffary. It is plain, that by this procefs of winding the cloth from one axis upon the other, every part of it is expofed, in the moft complete manner, to the action of the liquor in which it is immerfed. It will be neceffary

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ary to turn, at firſt, very briſkly, not only because the liquor is then the ſtrongeſt, but alſo because it requires a number of revolutions, when the axis is bare, to move a certain length of cloth in a given time, though this may be performed by a ſingle revolution when the axis is filled. Experience muſt teach how long the goods are to be worked; nor can any rule be given reſpecting the quantity and ſtrength of the liquor, in order to bleach a certain number of pieces. An intelligent workman will ſoon attain a ſufficient knowledge of theſe points. It is hardly neceſſary to obſerve, that, if the liquor ſhould retain any ſtrength after a ſet of pieces are bleached with it, it may again be employed for another ſet. With a few alterations, this apparatus might be made applicable to the bleaching of yarn. If, for inſtance, the pulley O were removed from the end of the axis K, and fixed immediately under the tube H:—if it were perforated in all directions, and tapes or ſtrings paſſed through the holes, ſkains of yarn might be tied to theſe tapes underneath the pulley, ſo as to hang down towards the bottom of the box. The apparatus being afterwards filled with bleaching liquor, and the axis turned, the motion would cauſe every thread to be acted upon by the liquor. Several axes might thus be turned in the ſame box, and being connected with each other by pulleys, they might all be worked by one perſon at the ſame time; and as all would turn the ſame way and with the ſame ſpeed, the ſkains could not poſſibly entangle each other.

OXYREGMIA, in medicine, ſourneſs of the ſtomach, occaſioning acid belches. See RUCTATION and ERUCTATION.

* OXYRRHODINE. *n. ſ.* [ὀξυρόδινον, ὄξος, and ῥόδον.] A mixture of two parts of oil of roſes with one of vinegar of roſes.—The ſpirits, opiates, and cool things, readily compoſe *oxyrrhodines*. *Floyer.*

(1.) OXYRRNCHUS, in ichthyology, a fiſh of the trutaceous kind, often caught in the Britiſh ſeas, and carried to the Dutch markets among whitings. It is much of the figure and ſize of trout, but a little flatter, and covered with large white ſcales.

(2.) OXYRYNCHUS, in ancient geography, a town of Egypt, on the Nile. *Strabo.*

OXYTOCHA, in midwifery, [from ὀξὺς, ſharp, and τίκτω, to bring forth], medicines given to promote delivery.

OYAPOCK, a river of S. America, in Guiana, which runs into the Atlantic, near Cape Orange.

(1.) OYE, a town of France, in the dep. of the Straits of Calais, ſeated on the Oye, (N° 2.) five miles W. of Gravelines, and ſeven ENE. of Calais. It formerly belonged to the Engliſh.

(2.) OYE, a river of France, running into the Aa, near the above town.

(3.) OYE, NORTH, } two iſlands of Denmark in
(4.) OYE, SOUTH, } the North Sea, two and three miles N. of Nordſtrand.

(1.) * OYER. *n. ſ.* [*oyer*, old Fr. to hear.] A court of *oyer* and terminer is a judicature where cauſes are heard and determined.

(2.) OYER, in law-books, ſeems to have been anciently uſed for what is now called *aſſiſes*. See ASSISE.

(3.) OYER, in geography, a town of Norway, 33 miles N. of Chriſtiania.

* OYES. [*oyez*, *hear ye*, French.] In the introduction to any proclamation, or advertiſement given by the public crier, both in England and Scotland. It is thrice repeated.—

Fairies, black, grey, green, and white,
Attend your office and your quality.
Crier hobgoblin make the fairy *O yes*. *Shak.*
O yes! if any happy eye
This rowing wanton ſhall deſcry;
Let the finder ſurely know
Mine is the wag. *Crashaw.*

* OYLETHOLE. *n. ſ.* [It may be written *eylet*, from *œillet*, Fr. but *eylet* ſeems better.]—

Diſtinguiſh'd flaſhes deck the groat,
As each excels in birth or ſtate;
His *oylethole* are more and ampler,
The king's own body was a ſampler. *Prior.*

OYNE, a pariſh of Scotland, in Aberdeenſhire, in the diſtrict of Garioch, commonly pronounced *Een*. Its form is irregular, and its length and breadth vary from 3 to 4 miles. It is bounded by the Ury and Shevock on the N. and NE. by the Gady on the E. and by the Don on the S. The air is pure and healthy; the ſoil rich and very fertile; and huſbandry in a ſtate of improvement. The harveſt is commonly earlier than in any of the neighbouring diſtricts. There are conſiderable plantations of fruit and foreſt trees on the eſtates of Weſthall, Tillyfour, and Pittodry, which makes them pleaſant ſummer-retreats. The population, in 1793, was 630; the decreaſe 10, ſince 1755. The number of ſheep was 1000; of horſes 150; and black cattle, 600. There are two ancient Druidical temples.

OYON, a town of Spain, in Alava.

OYONGWONGEYK, a town of the United States, on Lake Ontario; 4 miles E. of Fort Niagara.

OYONNAX, a town of France, in the dep. of Ain, 7½ miles N. of Nantua, and 12 SSW. of St Claude.

OYSSEL, a town of France, in the department of the Lower Seine; 7 miles S. of Rouen.

(1.) * OYSTER. *n. ſ.* [*oeſter*, Dutch; *huitre*, French.] A bivalve teſtaceous fiſh.—

I will not thee a penny—
—Why then the world's mine *oyſter*, which I with ſword will open. *Shak.*

—Rich honeſty dwells, like your miſer, Sir, in a poor houſe; as your pearl in your foul *oyſter*. *Shak.*—Another maſs held a kind of *oyſter* ſhell, and other bivalves. *Woodward.*—There may be many ranks of beings in the inviſible world as ſuperior to us, as we are ſuperior to all the ranks of beings in this viſible world; though we deſcend below the *oyſter* to the leaſt animated atoms diſcovered by microſcopes. *Watts.*—

Where *oyſter* tubs in rows
Are rang'd beſide the poſts, there ſtay thy haſte. *Gay.*

(2.) OYSTER, in Zoology. See OSTREA, and PECTEN.

(3.) OYSTERS, FISHERY OF. See FISHERY, § 13; and OSTREA.

(4.) OYSTERS, FOSSILE. The largeſt bed that is known of foſſile oyſters is that near Reading in Berkſhire. They are entirely ſhaped, and have the ſame ſubſtance with the recent oyſter-ſhells; and

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and yet since the oldest histories that mention the place give an account of them, we must suppose they have lain there for a long time. They extend over no less than six acres of ground.

OYSTER-BAY, a bay and township of New-York, in Queen's county, Long Island. The latter contained 4098 inhabitants in 1795; of whom 621 were electors, and 381 slaves.

OYSTER-CATCHER. See HÆMATOPUS.

OYSTER-HAVEN, a sea-port of Ireland, in Cork.

(1.) OYSTER ISLAND, an island of Ireland on the W. coast of Sligo Bay, 4 miles WNW. of Sligo.

(2, 3.) OYSTER ISLAND, an island of Massachusetts, near the SE. coast, in a bay or harbour to which it gives name. Lon. 70. 24. W. Lat. 41, 35. N.

OYSTER RIVER, a large river of New Zealand, abounding with oysters, which runs into the S. head of Mercury Bay, in Lat. 36° 48′ 28″ S. See COOK, N° III. § 8.

OYSTER SHELLS are an alkali far more powerful than is generally allowed, and in all probability much better medicines than many of the more costly and pompous alkalis of the same class. The proof of alkalis is in their solution by acid spirits; and Mr Homberg found, that they dissolved far easier in acids of nitre and sea-salt than either pearls or coral, or indeed than any of the rest. This he supposes to be owing to their containing in the body of the shell a large portion of sal salsus, which is easily perceived upon the tongue, and which keeps the whole substance of the shell in a sort of half dissolved state. These shells produce very sensible effects on the stomach, when it is injured by acid humours; and Mr Homberg thinks, that this easiness of solution is a great argument for their good effects, and that the quantity of sal salsus which it contains, contributes not a little towards it; for we are not to look upon that as a salt merely, but as a salt of a peculiar nature, formed of sea salt by the organs of the animal, and the several fermentations it undergoes in the body of it, in the same manner as the nitrous and other salts of the earth cease to be nitrous, &c. whenever they become blended with the juices of plants, and form with them a salt peculiar to that plant; which is evidently the case as far as respects this salt, it being plainly of a more penetrating taste, and of a different smell, from the salt left by the sea-water between the several external scales or flakes of the shell. Instead of preparing oyster shells for medical use by calcination, Mr Homberg recommends them to be powdered in a mortar.

* OYSTERWENCH, } *n. s.* [*oyster* and *wench*,
* OYSTERWOMAN. } or *woman*.] A woman whose business is to sell oysters. Proverbially, a low woman.—

Off goes his bonnet to an *oysterwench*. *Shak.*
The *oysterwomen* lock'd their fish up,
And trudg'd away to cry no bishop. *Hudibras.*

(1.) * OZÆNA, *n. s.* [ὀζαινα, from ὀζω; *ozène*, Fr.] An ulcer in the inside of the nostrils that gives an ill stench. *Quincy.*

(2.) OZÆNA is a malignant ulcer of the nose, distinguished by its fœtor, and often accompanied with a caries of the bones of the nose. See SURGERY, *Index*.

OZAMA, a river of Hispaniola, which is navigable for 30 miles above its mouth; is in some places 24 feet deep, and runs into the sea below St Domingo; in Lon. 72. 33. W. of Paris. Lat. 18. 18. N.

OZANAM, James, an eminent French mathematician, born at Bolignieux in Bresse, in 1640, of a wealthy family. His father designed him for the church; but his mathematical genius showed itself so early, that he made that study his profession. He taught that science at Lyons. In 1709 he was admitted into the Royal Academy of Sciences; and died of an apoplexy in 1717. He was of a mild and serene temper, of singular generosity, and of a cheerful disposition. His works are very numerous, and have met with approbation. The principal are, 1. Practical geometry, 12mo. 2. A mathematical dictionary. 3. A course of mathematics, 5 vols. 8vo. 4. Mathematical and philosophical recreations, the most complete edition of which is that of 1724, in 4 vols. 8vo. 5. An easy method of surveying. 6. New elements of algebra, a work much commended by M. Leibnitz. 7. Theoretical and practical perspective, &c.

OZAR, a town of Persia, in Segestan.

OZAS, a town of France, in the dep. of the Po, and ci-devant principality of Piedmont; 5 miles W. of Carmignola, and 10 S. of Turin.

OZELL, John, a correct translator of many works from different languages, was educated in Christ's Hospital, and possessed a competent fortune, arising from places in the city of London. He died in 1743.

OZEMAN, a town of Turkey, in Natolia.

OZERNIA, two forts of Russia, in Upha, on the Ural; the one 40 miles W. the other 64 E. of Orenburg.

OZERNOVSKOI, a cape of Russia, on the E. coast of Kamtschatka, 32 miles NE. of Ukinskoi.

OZIAS, the son of Micha, of the tribe of Simeon, one of the governors of Bethulia, when it was besieged by Holofernes. See HOLOFERNES.

OZIGINA, an ostrog, or village of Russia, in Kamtschatka, on the Indigirda. Lon. 160. 8. E. Ferro. Lat. 69. 30. N.

OZINOVSKOI, a town of Russia, in Perm.

OZLEWORTH, a town of England, in Gloucestershire, about 18 miles from Glocester.

(1.) OZMA, a river of European Turkey, which runs into the Danube, 4 miles W. of Nicopoli.

(2.) OZMA, a town of Turkey, on the above river, 28 miles S. of Nicopoli.

OZOHOWK, a town of Poland, in Volhynia.

OZOLÆA, a country in the E. part of Ætolia. This tract of country lay at the N. of the bay of Corinth, and extended about 12 miles.

OZOLÆ, or } the ancient inhabitants of Ozo-
OZOLI, } LÆA. Their name was derived from ὀζειν, "to smell bad," and by others from ὀζος, "a branch or sprout."

OZUNICZE, a town of Lithuania, in Wilna, 30 miles SE. of Breslaw.

OZWIEZIN, a town of Poland, on the Weitchel; defended on one side by a great morass, and on the other by a castle, with wooden walls; 34 m. W. of Cracow. Lon. 19. 10. E. Lat. 50. 10. N.

* (1.) P

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(1.) * P is a labial consonant, formed by a slight compression of the anterior part of the lips; as, *pull, pelt*. It is confounded by the German and Welsh with *b*; it has an uniform sound; it is sometimes mute before *t*; as, *accompt, receipt*; but the mute *p* is in modern orthography commonly omitted.

(2.) P is used, 1. as a letter; 2. as an abbreviation; 3. it was anciently used as a numeral. I. As a LETTER, P is the 15th of the alphabet, and the 11th consonant. The sound is formed by expressing the breath somewhat more suddenly than in forming the sound of *b*; in other respects these two sounds are pretty much alike. When *p* stands before *t* or *s*, its sound is lost; as in the words *psalms, psychology, ptolemaic, ptisan*, &c. When placed before *h*, they both together have the sound of *f*; as in *philosophy, physic*, &c. *P* and *B* are so like each other, that in ancient inscriptions, and old glossaries, these two letters have often been confounded. Several nations still pronounce one for the other, the Welch and Germans particularly, who say, *ponum vinum* for *bonum vinum*. Among the Latins, as often as an *s* followed, the *b* was changed into a *p*, as *scribo, scripsi*. St Jerome observes, on Daniel, that the Hebrews had no P; but that the *ph* served them instead thereof; adding that there is but one word in the whole Bible read with a *P*. viz. *apadno*. II. As an ABBREVIATION, P stands for *Publius, Pondo*, &c. P. A. DIG. for *Patricia Dignitas*; P. C. for *Patres Conscripti*; P. F. for *Publii Filius*; P. P. for *Propositum*, or *Propositum publice*; P. R. for *Populus Romanus*; P. R. S. for *Prætoris sententia*; P. R. S. P. for *Præses provinciæ*. P. M. among astronomers, is frequently used for *post meridiem*, or *afternoon*; and sometimes for *post manè, after the morning*, i. e. *after midnight*. On the French coins, *P* denotes those that were struck at Dijon. In the Italian music, P stands for *piano*, or *softly*; and P. P. P. for *pianissimo*, or *very softly*. Among physicians, P stands for *pugil*, or the 8th part of an handful; P. Æ. *partes æquales*, or equal parts of the ingredients; P. P. signifies *pulvis patrum*, or Jesuit's bark in powder; and *ppt. præparatus*, or prepared. III. As a NUMERAL, P was used among the ancients to signify the same with the G, viz. 100; though Baronius thinks it rather stood for seven. When a dash was added a-top of P, it stood for 400,000. The Greek π signified 80.

(1, 2.) PA, two towns of of China of the second rank: 1. In Pe-tche-li; 50 miles S. of Peking: 2. In Se-tchuen, 695 miles S. of Peking. Lon. 124. 10. E. of Ferro. Lat. 31. 51. N.

(3.) PA, a town of Thibet, 450 m. E. of Lassa.

(4.) PA DEL ZOCCO, a cape of Carniola.

PAA, a town of the isle of Ceram, in the East Indian Ocean, and capital of a district so named, abounding in sago.

PAATOCK, a river of Scotland, in Inverness-shire, which runs from Loch-Paatock into Loch-Laggen.

PAAW, Peter, a Dutch physician, born at Amsterdam, in 1564. He became eminent at Leyden, where he wrote several Latin treatises on medicine, and died in 1716.

PABAY, an island of Scotland, one of the Hebrides, 8 miles from Barray; about 1½ mile long, and 1 broad; inhabited by 3 families.

PABBA, an island of Scotland, two miles from that of Sky, about a mile long, and three quarters of a mile broad. It has relics of an ancient chapel, exhibits signs of iron ore, and has rocks of limestone of the nature of marble, with beautiful petrefactions of fish and shells.

PABBAY, an island of Scotland in Inverness-shire, included in the parish of Harris. (See HARRIS, N° 3.) It has a conical appearance, and rises to a peak considerably higher than the adjacent isles. It is nearly circular, and its diameter is about 2½ miles. It is very fertile except on the NW. where it is exposed to the spray from the Atlantic, and of consequence covered with sand; but on the SW. it is sheltered by BERNERAY. It is nine miles in circumference. Lon. 4. 7. W. of Edinburgh. Lat. 57. 55. N.

PABIANICE, a town of Poland, in Siradia; 32 miles ENE. of Siradia.

PABNEIKIRCHEN, a town of Austria.

PABOON, an island of Africa, in the Gambia; 9 miles long, belonging to the kingdom of Yani.

* PABULAR. *adj.* [*pabulum*, Lat.] Affording aliment or provender.

* PABULATION. *n. f.* [*pabulum*, Lat.] The act of feeding or procuring provender.

* PABULOUS. *adj.* [*pabulum*, Lat.] Alimental; affording aliment.—We doubt the air is the *pabulous* supply of fire, much less that flame is properly air kindled. *Brown's Vulgar Errors.*

(1.) * PABULUM. [Lat.] Food; support. A technical word.

(2.) PABULUM, among natural philosophers, is the same with FUEL.

PACA. See CAVIA, N° VII. 1, 2.

PACAJES, a district of Buenos Ayres, in the prov. of La Paz, containing some rich silver mines. The air is mild, sometimes cold; the pastures are good, and cattle its chief commerce.

PACAUDIERE, a town of France, in the department of the Rhone and Loire; 12 miles W. of Charlieu, and 12 NW. of Roannne.

(1.) PACE, Richard, a learned Englishman, born about 1482. Henry VIII. made him secretary of state, and he was admitted prebendary of York, archdeacon of Dorset, and dean of St Paul's, &c. during his absence on foreign embassies. Falling under the displeasure of Wolsey, he was so ill treated as to drive him mad, and, on his return, was thrown into the Tower for complaining to the king. After being confined two years, he was enlarged, resigned his deaneries, and died in retirement, at Stepney, in 1532, after having written several works. He was much esteemed by the learned men of his time, especially Sir Thomas More and Erasmus.

(2.) * PACE. *n. f.* [*pas*, French.] 1. Step; single movement in walking.—

Behind her Death,
Close following *pace* for *pace*. *Par. Lost.*

2. Gait; manner of walk.—He himself went but a kind of languishing *pace*. *Sidney.*—

He saw Menalcas come with heavy *pace*. *Add.*

3. Degree of celerity. To *keep* or *hold pace*, is not to be left behind.—

To-morrow

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To-morrow, and to-morrow, and to-morrow,
Creeps in this petty *pace* from day to day. *Shak.*
How the world goes, that to the *pace* of it
I may spur on my journey. *Shak. Coriol.*
Nor her winged speed,
The falcon gentle could for *pace* exceed. *Chap.*
—His teachers were fain to restrain his forwardness; that his brothers, under the same training, might hold *pace* with him. *Wotton's Buckingham.*—
The beggar sings, ev'n when he sees the place
Beset with thieves, and never mends his *pace*.
Dryden.
He mended *pace* upon the touch. *Hudibras.*
Marcia could answer thee in sighs, keep *pace*
With all thy woes. *Addison.*
—Hudibras applied his spur to one side of his horse, as not doubting but the other would keep *pace* with it. *Addison.* 4. Step; gradation of business. A gallicism.—The first *pace* necessary for his majesty to make, is to fall into confidence with Spain. *Temple.* 5. A measure of five feet. —The quantity supposed to be measured by the foot from the place where it is taken up to that where it is set down.—Measuring land by walking over it, they styled a double step; i. e. the space from the elevation of one foot to the same foot set down again, mediated by a step of the other foot a *pace* equal to five feet; 1000 of which *paces* made a mile. *Holder on Time.*—The violence of tempests never moves the sea above six *paces* deep. *Wilkin's Math. Magic.* 6. A particular movement which horses are taught, though some have it naturally, made by lifting the legs on the same side together.—
They rode, but authors having not
Determin'd whether *pace* or trot;
That's to say, whether tollutation,
As they do term it, or succussation. *Hudibras.*

(3.) *A* PACE is a measure taken from the space between the two feet of a man in walking; usually reckoned 2½ feet, and in some men a yard or 3 feet. The geometrical pace is 5 feet; and 60,000 such paces make one degree on the equator.

(4.) PACE, in the manege, is of three kinds, viz. walk, trot, and gallop; to which may be added amble, because some horses have it naturally.

(1.) * *To* PACE. *v. a.* [from the noun.] 1. To measure by steps.—
Where is the horse that doth untread again
His tedious measures with th' unbated fire
That he did *pace* them first? *Shak. Mer. of Ven.*
2. To direct to go; to regulate in motion.—
If you can, *pace* your wisdom
In that good path that I would wish it go. *Shak.*

(2.) * *To* PACE. *v. n.* 1. To move on slowly.—
He soft arrived on the grassie plain,
And fairly *paced* forth with easy pain. *Spenser.*
As we *paced* along
Upon the giddy footing of the hatches,
Methought that Glo'ster stumbled. *Shak. R. III.*
Crispinus, both in birth and manner vile,
Pacing in pomp with cloak of Tyrian dye,
Changed oft a day. *Dryden's Juvenal.*
—The moon rose in the clearest sky I ever saw, by whose solemn light I *paced* on. *Pope.*—
The nymph, obedient to divine command,
To seek Ulysses *paced* along the sand. *Pope.*
2. To move.—
Remember well, with speed to *pace*
To speak of Perdita. *Shak. Winter's Tale.*
3. [Used of horses.] To move by raising the legs on the same side together.

* PACED. *adj.* [from *pace*.] Having a particular gait.—
Revenge is sure, though sometimes slowly
paced. *Dryden.*

(1.) PACEM, a kingdom of India, in the island of Sumatra; dependent on Acheen.

(2.) PACEM, the capital of the above kingdom, contains about 500 families, and lies 120 miles SE. of Acheen. Lon. 97. 15. E. Lat. 5. 0. N.

* PACER. *n. f.* [from *pace*.] He that paces.

PACHA. *n. f.* a title of honour and command in the East, nearly synonimous with bashaw. This word is omitted in all English dictionaries. See BASHAW, § 2.

PACHACAMAC, or } a valley of Peru, in South
(1.) PACHAMAC, } America, ten miles S. of Lima, celebrated for its pleasantness and fertility, but more on account of a magnificent temple built by the Incas of Peru, to the honour of their god. When the Spaniards conquered Peru, they they found immense riches therein.

(2.) PACHAMAC, a town of the above valley.

(3.) PACHAMAC, in mythology, the name given by the Peruvians to the Supreme God; to whom the temple in the above valley was dedicated, and after whom the valley and town were named.

PACHAMACLI, a town of Turkey in Romania, 40 miles S. of Philippopoli.

PACHETE, a fort of Indostan, in Bengal.

PACHI, a town of Thibet, 70 m. SE. of Hami.

PACHIUTLA, a town of Mexico, in Tlascala.

PACHODECARHOMBIS, in the old system of mineralogy, a genus of fossils, of the class of *selenitæ*. The word is derived from the Greek παχος, *thick*, δεκα, *ten*, and ρομβος, *a rhombus*, and expresses a thick rhomboidal body composed of ten planes. The characters are, that the selenitæ of it consist of ten planes; but, as the top and bottom in the leptodecarhombes are broader and larger planes than any of the rest, the great thickness of this genus, on the contrary, makes its four longer planes in all the bodies of it, meeting in an obtuse angle from its sides, its largest planes. There are four species.

PACHSU, a small island in the Mediterranean, near the coast of Epirus. It lies S. of Corfu, and is included in the republic of the Seven Islands.

PACHUCA, a town of Mexico, famous for its silver mines, of which Gemelli says it has 1000 within six leagues. One of them afforded above 40 millions of silver in 10 years. It lies 45 miles NNE. of Mexico.

PACHYMERUS, George, a Greek historian of the 14th century. He wrote *a History of the East*, which merits the more credit, from his knowledge of affairs and the share he had in the transactions he records. It commences with the year 1308.

(1.) PACIFIC. *adj.* See PACIFICK.

(2.) PACIFIC OCEAN, that vast ocean which separates Asia from America. It is called *Pacific*, from the moderate weather the first mariners who sailed in it met with between the tropics; and it was called *South Sea*, because the Spaniards crossed the isthmus of Darien from N. to S. when they first

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firſt diſcovered it; though it is properly the Weſtern ocean with regard to America.

* PACIFICATION. *n. ſ.* [*pacification*, Fr. from *pacify*.] 1. The act of making peace.—He ſent forthwith to the French king his chaplain, chuſing him becauſe he was a churchman, as beſt ſorting with an embaſſy of *pacification*. *Bacon's Hen.* VII.—David, by an happy and ſeaſonable *pacification*, was took off from acting that bloody tragedy. *South.* 2. The act of appeaſing or pacifying.—A world was to be ſaved by a *pacification* of wrath. *Hooker.*

* PACIFICATOR. *n. ſ.* [*pacificateur*, Fr. from *pacify*.] Peace-maker.—He had in conſideration the bearing the bleſſed perſon of a *pacificator*. *Bacon's Hen.* VII.

* PACIFICATORY. *adj.* [from *pacificator*.] Tending to make peace.

* PACIFICK. *adj.* [*pacifique*, French; *pacificus*, Lat.] Peace-making; mild; gentle; appeaſing.—God now in his gracious *pacifick* manner comes to treat with them. *Hammond's Fund.*—

An olive leaf he brings, *pacifick* ſign! *Milton.*

PACIFICUS, Maximus, a native of Aſioli, born in 1400, who lived near a century. His Latin Poems have been often printed under the title of *Hecatelegium, ſive C. Elegiæ*. The venereal diſeaſe is ſo accurately deſcribed in one of them, as to give reaſon to believe, that it was known in Europe, previous to Columbus's diſcovery of America, in 1493; for Pacificus's work was publiſhed in 1489.

* PACIFIER. *n. ſ.* [from *pacify*.] One who pacifies.

* *To* PACIFY. *v. a.* [*pacifier*, Fr. *pacifico*, Lat.] To appeaſe; to ſtill reſentment; to quiet an angry perſon; to compoſe any deſire.—He had withdrawn to *pacify* with ſleep his over-watched eyes. *Sidney.*—Menelaus promiſed Ptolemy money, if he would *pacify* the king. 2 *Mac.* iv. 45.—The Moſt High is not *pacified* for ſin by the multitude of ſacrifices. *Eccluſ.* xxxiv. 19.—He went on as far as York, to *pacify* and ſettle thoſe countries. *Bacon.*—O villain! to have wit at will upon all other occaſions, and not one diverting ſyllable now at a pinch to *pacify* our miſtreſs. *L'Eſtrange.*

Nor William's power, nor Mary's charms,
Could or repel, or *pacify* his arms. *Prior.*

PACINISCO, a town of Naples, in Lavora.

(1.) * PACK. *n. ſ.* [*pack*, Dutch.] 1. A large bundle of any thing tied up for carriage.—The imagery appears in figures: whereas in thoughts they lie but as in *packs*. *Bacon.*

Had ſly Ulyſſes, at the ſack
Of Troy, brought thee his pedlar's *pack*. *Cleaveland.*

Our knight did bear no leſs a *pack*
Of his own buttocks on his back. *Hudibras.*

2. A burden; a load.—

I rather choſe,
To croſs my friend in his intended drift,
Than, by concealing it, heap on your head
A *pack* of ſorrows. *Shak. Merch. of Ven.*

—But when they took notice how ſtupid a beaſt it was, they loaded it with *packs* and burdens. *L'Eſtrange.* 3. A due number of cards.—

Women to cards may be compar'd, we play
A round or two; when uſed, we throw away,
Take a freſh *pack*. *Granville.*

—It is wonderful to ſee perſons of ſenſe paſſing away a dozen hours together in ſhuffling and dividing a *pack* of cards. *Addiſon.* 4. A number of hounds hunting together.—

Two ghoſts join their *packs* to hunt her o'er
the plain. *Dryden.*
The fury fires the *pack*. *Dryden.*
The ſavage ſoul of game is up at once,
The *pack* full-opening various. *Thomſ. Sum.*

5. A number of people confederated in any bad deſign or practice.—There's a knot, a gang, a *pack*, a conſpiracy, againſt me. *Shak. Mer. Wives.*—Never ſuch a *pack* of knaves and villains, as they who now governed in the parliament. *Clarendon.*—Bickerſtaff is more a man of honour, than to be an accomplice with a *pack* of raſcals. *Swift.* 6. Any great number, as to quantity and preſſure: as, a *pack* or world of troubles. *Ainſworth.*

(2.) PACK, in commerce. A pack of wool is 17 ſtone and 2 pounds, or a horſe's load.

(1.) * *To* PACK. *v. a.* [*pakken*, Dutch.] 1. To bind up for carriage.—

A poor merchant driv'n on unknown land,
That had by chance *pack'd* up his choiceſt treaſure
In one dear caſket. *Otway.*

Reſolv'd for ſea, the ſlaves thy baggage *pack*,
Each ſaddled with his burden on his back. *Dryd.*

—What we looked upon as brains, were an heap of ſtrange materials, *packed* up with wonderful art in the ſkull. *Addiſon.* 2. To ſend in a hurry.—

He cannot live, I hope, and muſt not die,
Till George be *pack'd* with poſt-horſe up to heav'n. *Shak.*

3. To ſort the cards ſo as that the game ſhall be iniquitouſly ſecured. It is applied to any iniquitous procurement of colluſion.—

Enos has
Packt cards with Cæſar, and falſe play'd. *Shak.*

—There be that can *pack* cards and yet cannot play well. *Bacon's Eſſays.*—

The judge ſhall jobb, the biſhop bite the town,
And mighty dukes *pack* cards for half a crown. *Pope.*

4. To unite picked perſons in ſome bad deſign.—

When they have *pack'd* a parliament,
We'll once more try th' expedient. *Hudibras.*

—Brutes, called men, in full cry, *pack'd* by the court or country, run down in the houſe of commons, a deſerted horned beaſt of the court. *Wycherley.*—

So many greater fools than they,
Will *pack* a crowded audience the third day. *Southern.*

—A *pack'd* aſſembly of Italian biſhops, not a free convention of fathers from all quarters. *Atterbury.*

(2.) * *To* PACK. *v. n.* 1. To tie up goods.—

He at his riſe, at his full ſtop
Packs and ſhuts up her gaudy ſhop. *Cleaveland.*

2. To go off in a hurry; to remove in haſte.—

New farmer thinketh each hour a day,
Until the old farmer be *packing* away. *Tuſſer.*

Rogues, hence, avaunt!
Seek ſhelter, *pack*. *Shak. M. W. of Windſor.*

—The wind no ſooner came good, but away *pack* the gallies. *Carew.*—A thief kindled his torch at Jupiter's altar, and then robbed the temple: as he was *packing* away with his ſacrilegious burden, a voice purſued him. *L'Eſtrange.*—If they had been

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ſo

an hundred more, they had been all ſent *packing* with the ſame anſwer. *Stillingfleet.*—

Pack hence, and from the cover'd benches riſe;
This is no place for you. *Dryden.*

Poor Stella muſt *pack* off to town. *Swift.*

3. To concert bad meaſures; to confederate in ill; to practiſe unlawful confederacy or colluſion. This they impute partly to the eaſtern buyers *packing*, partly to the owners not venting the ſame. *Carew.*—Go *pack* with him. *Shak. T. Andronicus.*

PACKAGE, *n. ſ.* is a ſmall duty of one penny in the pound, paid for all goods not particularly rated.

* PACKCLOATH. *n. ſ.* [*pack* and *cloath.*] A cloth in which goods are tied up.

* PACKER. *n. ſ.* [from *pack.*] One who binds up bales for carriage.

PACKERSFIELD, a townſhip of New Hampſhire, in Cheſhire county, containing 721 citizens in 1795.

(1.) * PACKET. *n. ſ.* [*pacquet*, French.] 1. A ſmall pack; a mail of letters.—

In the dark
Grop'd I to find out them,
Finger'd their *packet. Shak.*—There paſſed continually *packets* and diſpatches between the two kings. *Bacon's Henry* VII.—His *packets* returned with large acceſſions of objections. *Fell.*—

Upon your late command
To guard the paſſages, and ſearch *packets*,
This to the prince was intercepted. *Denham.*

2. A ſmall bundle, as of a mountebank's medicines. 3. The poſt ſhip, the ſhip that brings letters periodically.—If the wind be fair when the *packet* goes over. *Swift.*

(2.) *A* PACKET, or PACKET BOAT, (§ 1. *Def.* 3.) is a veſſel appointed by the government to carry the mail of letters, packets, and expreſſes from one kingdom to another by ſea in the moſt expeditious manner. Thus, the packet-boats, under the direction of the poſt-maſter general of Great Britain, carry the mails from Dover to Calais, from Falmouth to Liſbon, from Harwick to Helvoetſluys, and from Parkgate to Dublin. See POST.

* *To* PACKET. *v. a.* [from the noun.] To bind up in parcels.—My reſolution is to ſend you all your letters well ſealed and *packeted. Swift.*

* PACKHORSE. *n. ſ.* [*pack* and *horſe.*] A horſe of burden; a horſe employed in carrying goods.—

I was a *packhorſe* in his great affairs. *Shak.*

—It is not to be expected that a man who drudges on in a laborious trade ſhould be more knowing in the variety of things done in the world, than a *packhorſe. Locke.*

PACKINGTON, a town of Leiceſterſhire, one mile from Aſhby de la Zouch.

* PACKSADDLE. *n. ſ.* [*pack* and *ſaddle.*] A ſaddle on which burdens are laid.—Your beards deſerve not ſo honourable a grave as to ſtuff a butcher's cuſhion, or to be entombed in an aſſes *packſaddle. Shak. Coriolanus.*—He will patiently take the bit and bear a *packſaddle* or panniers. *Howel's Vocal Foreſt.*—The bunch on a camel's back may be inſtead of a *packſaddle* to receive the burden. *More againſt Atheiſm.*

* PACKTHREAD. *n. ſ.* [*pack* and *thread.*] Strong thread uſed in tying up parcels.—

Remnants of *packthread*, and old cakes of roſes
Were thinly ſcatter'd. *Shak. Romeo and Jul.*

—Girding of the body of the tree about with *packthread*, reſtraineth the ſap. *Bacon's Nat. Hiſt.*—I can compare ſuch productions to nothing but rich pieces of patchwork, ſewed together with *packthread. Felton.*—I tie him cloſe to his manger with a *packthread. Spectator.*—The cable was about as thick as *packthread. Swift.*

* PACKWAX. *n. ſ.*—Several parts peculiar to brutes are wanting in man; as the ſtrong aponeuroſes of the neck, called *packwax. Ray.*

PACMOTE BAY, an E. bay of Martinico.

PACOLET, a river of S. Carolina, which riſes in the White Oak mountains, and thence running SE. falls into Broad River. A medicinal ſpring near it has the ſame name.

PACORUS, the eldeſt of the 30 ſons of Orodes K. of Parthia, who defeated Craſſus, and took him priſoner, and took Syria from the Romans. He ſupported Pompey and the republican party; but was at laſt killed by Baſſus, A. A. C. 39. See PARTHIA.

PACOS, in zoology, a ſpecies of camel, commonly, though improperly, reckoned a ſpecies of ſheep; and known among many by the name of the *Indian ſheep*, or *Peruvian ſheep*. See CAMELUS, N° 4. This creature has been accounted a ſheep, becauſe its hair is ſo long as to reſemble wool, and it is prodigiouſly thick, its head and neck alone having more wool on them, than the whole body of our largeſt ſheep. Its body is clothed in the ſame proportion with a woolly hair equally fine.

* PACT. *n. ſ.* [*pact*, Fr. *pactum*, Lat.] A contract; a bargain; a covenant. The queen, contrary to her *pact* and agreement concerning the marriage of her daughter, delivered her daughters out of ſanctuary unto king Richard. *Bacon.*

* PACTION. *n. ſ.* [*paction*, Fr. *pactio*, Latin.] A bargain; a covenant.—The French king ſent for Matthew earl of Levenox, to remove the earl of Arraine from the regency of Scotland, and reverſe ſuch *pactions* as he had made. *Hayward.*—There never could be any room for contracts or *pactions* between the Supreme Being and his intelligent creatures. *Cheyne.*

* PACTITIOUS. *adj.* [*pactio*, Latin.] Settled by covenant.

(1.) PACTOLUS, a river of Lydia, called *Chryſorrhoas*, from its rolling down golden ſand, according to Herodotus, Plutarch, Pliny, and Strabo; riſing in mount Tmolus. *(Strabo.)* In this river Midas was fabled to have waſhed himſelf; (See MIDAS, N° 1.) and from it Crœſus is thought to have had all his riches. In Strabo's time it ceaſed to roll down any. It ran through Sardes; after which it fell into the Hermus, and both together into the Ægean ſea at Phocæa in Ionia.

(2.) PACTOLUS, another river, celebrated by Virgil, Ovid, Lucan, Lycophron, Horace, and Apollonius.

PACTYA, an ancient country of India, mentioned by Herodotus, which Major Rennel ſuppoſes

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poſes to be the modern PEHKELEY. See INDIA, § 3.

PACTYE, an ancient town of the Thracian Cherſoneſus.

PACTYS, a mountain of Ionia, near Epheſus. *Strabo*, 14.

PACUVIUS, Marcus, a native of Brunduſium in Calabria, a tragic poet in high reputation about the year of Rome 600. He was nephew of Ennius; publiſhed ſeveral theatrical pieces, though we have only ſome fragments of his poetry remaining; and died at Tarentum, at above 90 years of age.

PACY, an ancient town of France in the dep. of the Eure and late prov. of Normandy; ſeated on the Eure, 8 miles S. by E. of Vernon, according to Dr Brookes, but Mr Crutwell makes it as far SW. and 10½ E. of Evreux. Lon. 1. 41. E. Lat. 48. 58. N.

PACZANOW, a town of Poland, in Sandomirz; 28 miles ESE. of Sandomirz.

* PAD. *n. ſ.* [from *paud*, Sax. whence likewiſe path, or *paath*.] 1. The road; a foot-path.—We have ſeen this to be the diſcipline of the ſtate, as well as of the *pad*. *L'Eſtrange*.

The ſquire of the *pad* and the knight of the poſt.

Find their pains no more baulk'd. *Prior*.

2. An eaſy paced horſe.—Let him walk a foot with his *pad* in his hand. *Dryden*.—A grey *pad* is kept in the ſtable with great care. *Addiſon*.—I would have ſet you on an eaſier *pad*. *Pope*. 3. A robber that infeſts the roads on foot. 4. A low ſoft ſaddle; a cuſhion or bolſter; properly a ſaddle or bolſter ſtuffed with ſtraw. [*Pajado*, Spaniſh, of *Paja*, ſtraw.] Tremellius was called ſcropha or ſow, becauſe he hid his neighbour's ſow under a *pad*, and commanded his wife to lie thereon; he ſware that he had no ſow but the great ſow that lay there, pointing to the *pad*, and the ſow, his wife. *Camden*.—

We ſhall not need to ſay, what lack
Of leather was upon his back;
For that was hidden under *pad*. *Hudibras*.

* *To* PAD. *v. n.* [from the noun.] 1. To travel gently. 2. To rob on foot. 3. To beat a way ſmooth and level.

PADA, a town of Indoſtan, in Orixa.

PADAN-ARAM, in ancient geography, literally ſignifies *the plains of Aram*, or *Syria*; tranſlated by the Seventy ſimply MESOPOTAMIA, or *Meſopotamia of Syria*; by the Vulgate, *Syriæ*.

PADANG, a ſea port and fort of Sumatra, on the W. coaſt, belonging to the Dutch. Lon. 99. 46. E. Lat. 0. 50. S.

* PADAR. *n. ſ.* Grouts; coarſe flour.—All that came out could not be expected to be pure and fine meal, but muſt have amongſt it *padar* and bran in this lower age of human fragility. *Wotton*.

PADBERG, a town and fort of Germany, in Weſtphalia; 4 miles S. of Stadtberg, and 5 E. of Brilon.

* PADDER. *n. ſ.* [from *pad*.] A robber; a foot highwayman.—

Spurr'd, as jockies uſe to break,
Or *padders* to ſecure a neck. *Hudibras*.

Worſe than all the clatt'ring tiles, and worſe Than thouſand *padders*, is the poet's curſe. *Dryd.*—He has no better pretence to honour than what a reſolute and ſucceſsful *padder* may challenge. *Collier*.

PADDINGTON, a village of Middleſex, W. by N. of London, to which it lies contiguous, yet in a beautifully rural ſituation. It has an elegant church, built in 1790; and a new canal, in 1801.

* PADDLE. *n. ſ.* [*pattal*, Welſh.] 1. An oar, particularly that which is uſed by a ſingle rower in a boat. 2. Any thing broad like the end of an oar.—Have a *paddle* upon thy weapon, *Deut*. xxiii. 13.

* *To* PADDLE. *v. a.* [*patouiller*, Fr.] 1. To row, to beat water as with oars.—As the men were *paddling* for their lives. *L'Eſtrange*.

Paddling ducks the ſtanding lake deſire. *Gay*. 2. To play in the water.—The brain looks like an odd ſort of bog for fancy to *paddle* in. *Collier*.—A wolf lapping at the head of a fountain, ſpied a lamb *paddling* a good way off. *L'Eſtrange*. 3. To finger.—

Paddling palms, and pinching fingers. *Shak*.

* PADDLER. *n. ſ.* [from *paddle*.] One who paddles. *Ainſ*.

* PADDLE-STAFF. *n. ſ.* [from *paddle* and *ſtaff*.] A ſtaff headed with broad iron.

(1.) * PADDOCK. *n. ſ.* [*pada*, Saxon; *padde*, Dutch.] A great frog or toad.

The griſly toad-ſtool grown there mought I ſee,
And loathing *paddocks* lording on the ſame. *Spenſer*.

—The *paddock*, or frog *paddock*, breeds on the land, is bony and big, eſpecially the ſhe. *Walton*.

The water ſnake, whom fiſh and *paddocks* fed,
With ſtaring ſcales lies poiſon'd. *Dryden*.

(2.) PADDOCK, in zoology. See RANA.

(3.) * PADDOCK. *n. ſ.* [corrupted from *parrack*.] A ſmall incloſure for deer or other animals.

(4.) *A* PADDOCK, or PADDOC-COURSE, is a piece of ground encompaſſed with pales or a wall, and taken out of a park, for exhibiting races with grey-hounds, for plates, wagers, or the like. A paddoc is generally a mile long, and a quarter of a mile broad: at the one end is a little houſe where the dogs are to be entered, and whence they are ſlipped; near which are pens to incloſe two or three deer for the ſport. Along the courſe are ſeveral poſts, viz. the low poſt, which is 160 yards from the dog-houſe and pens; the quarter of a mile poſt, half-mile poſt, and pinching poſt; beſides the ditch, which is a place made to receive the deer, and preſerve them from farther purſuit. And near this place are ſeats for the judges choſen to decide the wager. The keepers, in order to ſlip the dogs fairly, put a falling collar upon each, ſlipped round a ring; and the deer being turned looſe, and put forward by a teazer, as ſoon as he is arrived at the low poſt, the dog-houſe door is thrown open, and the dogs ſlipped. If now the deer ſwerve ſo much, as that his head is judged nearer the dog-houſe than the ditch, before he arrive at the pinching-poſt, it is no match, and muſt be run over again three days after: but if the deer runs ſtraight beyond the pinching-poſt, then that dog which is neareſt when he ſwerves, or is blanched by any accident, wins the match: but if no ſuch ſwerve

5 happens

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happens, then the match is won by the dog who firſt leaps the ditch.

(1.) * PADELION *n. ſ.* [*pas de lion*, Fr. *pes leonis*, Lat.] An herb. *Ainſ.*

(2.) PADELION, or LION'S-FOOT. See CATANANCHE.

PADER, a river of Germany, which riſes under the altar in PADERBORN, and after running 3 miles is joined by two other ſtreams which form the Lippe. See LIPPE, No. 3.

(1.) PADERBORN, a duchy of Germany in the circle of Weſtphalia, allotted to the K. of Pruſſia, by Bonaparte's diviſion of the indemnities, in Aug. 1802; now added to the kingdom of Weſtphalia. It has the county of Lippe on the N. and W. Heſſe Caſſel and Waldeck on the S. and Munſter, with the duchy of Weſtphalia, on the W. Its greateſt length from E. to W. is about 40 miles, and its breadth, where wideſt, 30. Some parts of it yield good paſture, and feed great numbers of cattle; but it is not very fruitful in corn. There is a heath called the *Senne* or *Sende*, of great extent, but very barren and deſolate. There are good iron mines in the country, with ſalt and medicinal ſprings, plenty of deer and other game; and it is watered with ſeveral rivers abounding with fiſh, as the Weſer, Dimer, Bever, Nette, the great Emmer, Lippe, Alme, and Pader. It contains 54 pariſhes, in which are 25 market towns and 16 monaſteries. The Roman Catholic is the predominant religion; there are alſo many proteſtants. The biſhopric was erected by Charlemagne, towards the cloſe of the 8th century; and the cathedral was conſecrated by pope Leo in perſon, anno 796. In this country Quintilius Varus, with the Roman army under his command, was routed by the Germans under Arminius.

(2.) PADERBORN, the capital of the above biſhopric. It ſtands 40 miles NW. of Caſſel, 50 SE. of Munſter, and 60 SW. of Hanover; being a large, populous, well-built, and well-fortified city. Its name is compounded of *Pader*, a rivulet, which riſes juſt under the high altar of the cathedral, and *born*, *i. e.* a ſpring. It was one of the Hanſe towns; and, till 1604, an imperial city. The cathedral is a grand fabric, inferior to few in the empire. There is a gold crucifix in it of 60 lb. weight, preſented by Otho II. The univerſity, of which the Jeſuits have the direction, was founded in 1592, and the walls were built in the beginning of the 11th century. In 1530 an attempt was made to introduce Lutheraniſm; but 16 of the principal citizens who had embraced it were executed, and the reſt obliged to abjure it. Duke Chriſtian of Brunſwick carried off from hence, in 1692, the ſilver images of the 12 apoſtles and the ſilver coffin of St Lotharius; and had them coined into money, with this inſcription, *God's Friend, the Prieſt's Enemy.* The trade of this town, formerly great, is now inconſiderable; and the inhabitants ſubſiſt moſtly by agriculture and cattle. Charlemagne and other emperors ſometimes reſided here, and held diets of the empire. It lies 37 miles SW. of Minden. Lon. 8. 55. E. Lat. 51. 46. N.

PADERNA, a town of Portugal, in Algarve.

PADEW, a town of Poland, in Sandomirz.

* PADLOCK. *n. ſ.* [*padde*, Dutch.] A lock hung on a ſtaple to hold on a link.—

Let all her ways be unconfin'd;
And clap your *padlock* on her mind. *Prior.*

* *To* PADLOCK. *v. a.* [from the noun.] To faſten with a padlock.—Some illiterate people have *padlock'd* all thoſe pens that were to celebrate their heroes, by ſilencing Grub-ſtreet. *J. Bull.*

* PAD-NAG. *n. ſ.* [from *pad* and *nag*.] An ambling nag.—

An eaſy *pad-nag* to ride out a mile. *Dr Pope.*

PADOGI, a puniſhment uſed in Ruſſia. The body of the criminal is ſtripped to the waiſt, and then laid upon the ground; one ſlave holds the head of the perſon to be puniſhed between his knees, and another the lower part of the body; then rods are applied to the back till ſome perſon gives notice to deſiſt, by crying out *enough!* This puniſhment is conſidered in Ruſſia merely as a correction of the police, exerciſed on the ſoldier by military diſcipline, by the nobility on their ſervants, and by perſons in authority over all ſuch as are under their command. After the acceſſion of Eliſabeth to the throne of Ruſſia, the puniſhments were reduced to two kinds, viz. the padogi and KNOUT.

(1.) * PADOWPIPE. *a. ſ.* [*pes leoninus*, Lat.] An herb. *Ainſworth.*

(2.) PADOWPIPE, or Lion's-foot. See CATANANCHE.

PADROENS, a town of Portugal, in Alentejo, 13½ miles W. of Mertola.

PADRON, a town of Spain, in Galicia, on the Ulla; 12 miles S. of Compoſtella, and 15 S. of St Jago. Lon. 8. 17. W. Lat. 42. 40. N.

PADSTOW, a ſea port town of England on the N. coaſt of Cornwall, on the Camel, near the Briſtol Channel. It has a market on Saturday, and a good trade with London, Briſtol, and Ireland; from which laſt it is 24 hours ſail diſtant. Its harbour admits veſſels of 500 tons at high water. It is 19 miles, ſays Crutwell, 30 ſays Brookes, W. of Launceſton, and 243 W. by S. of London. Lon. 4. 45. W. Lat. 50. 42. N.

PADUA, an ancient, large, and celebrated city of Italy, now included in Maritime Auſtria, with an univerſity and a biſhop's ſee. It is capital of the PADUANO; but is much leſs conſiderable than it was formerly; for it now contains no more than 40,000 inhabitants, whereas it formerly had 100,000, and many of the houſes are gone to ruin: however, the hall where juſtice is adminiſtered, is a ſuperb ſtructure. Dr Oppenheim ſays it has 96 churches, and 16 hoſpitals. The cathedral church, and the college of the univerſity, are in that part called the *Old Town*; and there are piazzas under all the houſes, where perſons may walk without being expoſed to the weather. The garden of the univerſity is curious, on account of the number of plants. Here a ſtudent may take his degree, let him hold what religious opinions he will. The neighbouring mountains produce excellent wine and oil, with delicious fruit. It was taken by the Venetians in 1706. It is ſeated on the rivers Brenta and Bachilione, in a fine plane; and is about 7 miles in circumference. Lon. 11. 55. E. Lat. 45. 24. N.

PADUAN, among medalliſts, thoſe counterfeits of antique medals properly that were ſtruck in the 7th century, by an Italian painter born at Padua; but

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but often uſed in general for all counterfeit medals. See NUMISMATOGRAPHY, *Sect.* VI.

PADUANO, a ſmall province of Italy, in the ci-devant territory of Venice, bounded on the E. by the Dogado, on the S. by the Poleſina di Rovigo, on the W. by the Veroneſe, and on the N. by the Vicentino. Its ſoil is well watered, and is one of the moſt fertile in Italy. The province is commonly reckoned about 40 miles in length, and 35 in breadth; but Dr Oppenheim makes it no leſs than 45 *Italian* miles long, 40 broad, and 140 in circumference, comprehending 800,000 acres. It has 7 towns, 12 large boroughs, and 300 villages. It is ſo fertile in corn, wine, and vegetables, that he calls it "a *ſecond Paradiſe*, and the *garden of Europe*." It has 300,000 inhabitants. PADUA is the capital.

PADULA, a town of Naples, in Principato Citra, 14 miles N. of Policaſtro.

(1.) PADUS, anciently called ERIDANUS, a river famous for the fable of Phæton, (*Ovid.*) It riſes in mount Veſulus, in the Alpes Cottiæ, from three ſprings, dividing the Ciſalpine Gaul into the Tranſpadana and Ciſpadana, (*Strabo*); and, ſwelled by other rivers falling into it on each ſide from the Alps and Apennines, it diſcharges itſelf with a courſe from weſt to eaſt, at ſeven mouths, into the Adriatic (*Mela*). The lake, through which it diſcharges itſelf into the ſea, is called by the natives the *Seven Seas*; now the *Po*.

(2.) PADUS, in botany. See PRUNUS.

PADUTI, a town of Naples, in Calabria Citra, 4 miles E. of Roſano.

(1.) PÆAN, among the ancient pagans, was a ſong of rejoicing ſung in honour of Apollo, chiefly uſed on occaſion of victory and triumph. See APOLLO.

(2.) * PÆAN. *n. ſ.* [from the ſongs ſung at feſtivals to Apollo, beginning *Io Pæan.*] A ſong of triumph.—

O may I live to hail the glorious day,
And ſing loud *pæans* thro' the crowded way!
Roſcommon.

Hear, in all tongues conſenting *pæans* ring.
Pope.

(3.) PÆAN, in the ancient poetry, a foot conſiſting of four ſyllables; of which there are four kinds, the pæan primus, ſecundus, &c. Pæan primus conſiſts of one long ſyllable and three ſhort ones, or the trochæus and pyrrhichius, as *temporibus*; pæan ſecundus conſiſts of a ſhort ſyllable, a long, and two ſhort, or an iambus and a pyrrhichius, as *potentia*; pæan tertius conſiſts of two ſhort ſyllables, a long and a ſhort one, or a pyrrhichius and a trochæus, as *animatus*; pæan quartus conſiſts of three ſhort ſyllables and a long one, or a pyrrhichius and iambus, as *celeritas*.

PÆDERIA, in botany, a genus of the Monogynia order, belonging to the Pentandria claſs of plants.

PÆDEROS. See OPAL, § II. N° 1.

PÆDEROTA, in botany, a genus of the monogynia order, belonging to the diandria claſs of plants, according to Mr Lee; and in the natural method, ranking under the 30th order, *Contortæ*. The berry is empty, brittle, and diſpermous; the ſtyle bifid.

PÆDO-BAPTISM, infant-baptiſm, or that conferred on children; from παις, *infant*, and βαπτισμα, *baptiſm*. This has been the ſubject of great controverſy in the church. See ANABAPTISTS, BAPTISTS, &c.

PÆDO-BAPTIST. *n. ſ.* One who baptiſes infants, or pleads for the doctrine of infant baptiſm.

PÆDOTRIBA, in antiquity, one of the 4 officers in the ancient GYMNASIUM, whoſe buſineſs was to teach the exerciſes mechanically, without their theory.

PAEFENHOFFEN, a town of France, in the dep. of the Lower Rhine, and ci-devant prov. of Alſace, ſeated on the declivity of a mountain, near the Motter; 8 miles W. of Haguenau. Lon. 7. 38. E. Lat. 48. 48. N.

PÆMANIA, an ancient nation of Gallia Belgica, ſuppoſed to have inhabited the W. part of the ci-devant duchy of Luxemburg. *Cæſ. De Bell. Gall.* ii. c. 4.

PÆON, an ancient Greek hiſtorian. *Plut.*

PÆONES, a people of Macedonia, who inhabited the country called PÆONIA.

(1.) PÆONIA, a country of Macedonia, on the banks of the Strymon. *Liv.* xlii. c. 51.

(2.) PÆONIA, PIONY, a genus of the digynia order, belonging to the polyandria claſs of plants; and in the natural method ranking under the 26th order, *Multiſiliquæ*. The calyx is pentaphyllous; the petals five; there are no ſtyles; the capſules are polyſpermous. There are two ſpecies, both very hardy, which will flouriſh in any common ſoil. They are large herbaceous flowery perennials, with tuberous roots, ſending up ſtrong annual ſtalks from one to three feet in height; terminated by very large flowers of a beautiful red colour, and much larger than any roſe.

PÆONIA OFFICINALIS, the common officinal, or *male piony*, is remarkable for its capſules turning backward, opening and diſplaying their red inſide, together with the numerous ſeeds, in a ſingularly agreeable order, appearing very ornamental after the flower is paſt. The plants may be propagated either by parting the roots or by ſeed. This plant was formerly celebrated in nervous diſtempers, but the preſent practice pays very little regard to it.

PÆONIDES. See PIERIDES.

PÆOS, an ancient town of Arcadia.

PÆSOS, a town of the Helleſpont, N. of Lampſacus.

PÆSTUM, a town of Lucania, on the Sinus Pæſtinus; called POSIDONIA by the Greeks, an ancient colony prior to the firſt Punic war, according to Livy; but later, according to Velleius. *Pæſtanæ roſæ*, the roſes of Pæſtum, were in great eſteem, and produced twice a-year. (Virgil, Ovid.)

PÆTOVIUM, a town of Pannonia.

PÆTUS, Cæcinna, the huſband of Arria. See ARRIA.

PAGÆ, two ancient towns of Greece: 1. in Megaris: 2. in Locris. *Plin.* iv. c. 3.

(1.) PAGAN, Blaiſe Francis, Count of, an eminent French mathematician, born at Avignon in Provence, March 3. 1604. He became a ſoldier at 14, and ſignaliſed himſelf in an extraordinary manner on many occaſions. After the loſs of his eyeſight, which prevented him continuing to ſerve his country in the field, he publiſhed many valuable treatiſes

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treatises chiefly, on mathematical subjects. His principal works, are *Geometrical Theorems*, *The Theory of the Planets*, and *Astronomical Tables*. He died at Paris, Nov. 18. 1665; unmarried.

(2.) PAGAN, PETER, professor of History and Poetry at Marpurg. He wrote a history of the Horatii and Curiatii in Latin verse; and various pieces of Miscellaneous poetry. He died at Wanfrid, in Lower Hesse, May 20th, 1576.

(3.) * PAGAN, *n.s.* [*paganisc*, Saxon; *paganus*, Latin; from *pagus*, a village; the villages continuing heathen after the cities were Christian.] A Heathen; one not a Christian.

(4.) * PAGAN, *adj.* Heathenish.—

Their cloaths are after such a *pagan* cut too.
Shak.

The secret ceremonies I conceal;
But such they were as *pagan* use requir'd. *Dryd.*

(5.) PAGAN. See MYTHOLOGY.

PAGANALIA, certain festivals observed by the ancient Romans in the month of January. They were instituted by Servius Tullius, who appointed a certain number of villages (*pagi*), in each of which an altar was to be raised for annual sacrifices to their tutelar gods; at which all the inhabitants were to assist, and give presents in money, according to their sex and age, by which means the number of country people was known. The servants upon this occasion offered cakes to Ceres and Tullus, to obtain plentiful harvests.

PAGANELLUS, a species of GOBIUS.

PAGANICA, a town of Naples, in Abruzzo Ultra; 8 miles NNW. of Aquila.

(1.) * PAGANISM. *n.s.* [*paganisme*, Fr. from *pagan*.] Heathenism.—The name of popery is more odious than very *paganism* amongst divers of the more simple sort. *Hooker.*—Our labarum, in a state of *paganism*, you have on a coin of Tiberius. *Addison.*

(2.) PAGANISM, the religious worship and discipline of pagans; or, the adoration of idols and false gods. See IDOLATRY, MYSTERIES, MYTHOLOGY, and POLYTHEISM.

* PAGE. *n.s.* *page*, French.] 1. One side of the leaf of a book.—If a man could have opened one of the *pages* of the divine counsel, and seen the event of Joseph's being sold, he might have dried up the young man's tears. *Taylor.*—

Thy name, to Phœbus and the Muses known,
Shall in the front of every *page* be shown. *Dryd.*

—A printer divides a book into sheets, and the sheets into *pages*, the *pages* into lines, and the lines into letters. *Watts.* 2. [*Page*, Fr.] A young boy attending, rather in formality than servitude, on a great person.—

Prosperity be thy *page*! *Shak. Coriol.*

Pages following him, &c.
Even at the heels, in golden multitudes. *Shak.*

—He had two *pages* of honour, on either hand one. *Bacon.*—

Where is this mankind now? who lives to age
Fit to be made Methuselem his *page*? *Donne.*

This day thou shalt my rural *pages* see,
For I have dress'd them both to wait on thee.
Dryden.

—Philip of Macedon had a *page* attending in his chamber, to tell him every morning, Remember, O king, that thou art mortal. *Wake's Prep. for Death.*

* *To* PAGE. *v.a.* [from the noun.] 1. To mark the pages of a book. 2. To attend as a page.—

Will these moss'd trees,
That have out-liv'd the eagle, *page* thy heels,
And skip when thou point'st out? *Shak.*

(1.) * PAGEANT. *n.s.* [Of this word the etymologists give no satisfactory account. It may perhaps be *payen geant*, *a pagan giant*, a representation of triumph used at return from holy wars; as we have yet the Saracen's head.] 1. A statue in a show. 2. Any show; a spectacle of entertainment.—

When all our *pageants* of delight were paid,
Our youth got me to play the woman's part.
Shak.

I'll play my part in fortune's *pageant*. *Shak.*

This wide and universal theatre
Presents more woeful *pageants* than the scene
Wherein we play. *Shak. As you like it.*

Strange and unnatural, let's stay and see
This *pageant* of a prodigy. *Cowley.*

—The poets contrived the following *pageant* or machine for the pope's entertainment; a huge floating mountain that was split in the top in imitation of Parnassus. *Addison.* 3. It is used in a proverbial and general sense for any thing showy without stability or duration.—

Thus unlamented pass the proud away,
The gaze of fools, and *pageant* of a day. *Pope.*

The breath of others raises our renown,
Our own as soon does blow the *pageant* down.
Young.

(2.) * PAGEANT. *adj.* Showy; pompous: ostentatious; superficial.—

Were she ambitious, she'd disdain to own
The *pageant* pomp of such a servile throne.
Dryden.

(3.) *A* PAGEANT is a triumphal car, chariot, arch, or other like pompous decorations, variously adorned with colours, flags, &c. carried about in public shows, processions, &c.

* *To* PAGEANT. *v.a.* [from the noun.] To exhibit to show; to represent.—

With ridiculous and awkward action,
He *pageants* us. *Shak. Troil. and Cressida.*

* PAGEANTRY. *n.s.* [from *pageant*.] Pomp; show.—What a ridiculous *pageantry* is it, to see such a philosophical gravity set man out a soleciism! *Governm. of the Tongue.*—

Such *pageantry* be to the people shown. *Dryd.*

PAGEN, a town of the isle of Wight, in E. Medina.

(1.) PAGI, Anthony, a very famous Cordelier, and one of the ablest critics of his time, born at Rogne in Provence in 1624. He took the habit in the convent at Arles in 1641, and was 4 times provincial of his order; he died in 1699. His most considerable work is, A Critique upon the Annals of Baronius; the best edition of which is that in 4 vols. folio, Geneva, 1705.

(2.) PAGI, Francis, nephew of Anthony, and a member of the same order, wrote A Chronological Abridgment of the History of the Popes, in Latin, 3 vols. 8vo.

(3.) PAGI,

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(3.) PAGI, Anthony, nephew of Francis, added three more volumes to the Hiſtory of the Popes.

(4.) PAGI, John Baptiſt, an eminent Italian painter and engraver, born at Genoa, in 1555. He wrote a work in Italian, entitled *Definizione e Diviſione della Pittura*, in folio. He died at Genoa in 1629.

PAGIETTA, a town of Naples in Abruzzo Citra, 5 miles S. of Langiano.

* PAGINAL. *adj.* [*pagina*, Latin.] Conſiſting of pages.—An expreſſion proper unto the *paginal* books of our times, but not ſo agreeable unto the volumes or rolling books in uſe among the Jews. *Browne's Vulgar Errours.*

PAGLIA, a river of Italy, which riſes in Etruria, or Tuſcany, and runs into the Tiber, a few miles below Orvieto.

PAGLIANO, a town of Naples, in Abruzzo Ultra, 15 miles ESE. of Aquila.

PAGLIAPOLI, a town of Naples, in Calabria Ultra, 4 miles E. of Girace.

PAGLION, a river of France, in the department of Mont Blanc, and ci-devant duchy of Savoy; which runs into the Mediterranean, a little E. of Nice.

PAGNINUS, Sanctes, an Italian Dominican, eminent for his ſkill in Oriental languages and biblical learning, was born at Lucca in 1466, and became afterwards an eccleſiaſtic of the order of St Dominic. He was the author of tranſlations of both the Old and New Teſtaments, of an Hebrew Lexicon, and an Hebrew Grammar. He died in 1536, aged 70.

PAGNY, a town of France, in the dep. of Meurthe, on the Moſelle; 4½ miles N. of Pont a Mouſſon, and 10 SW. of Metz.

(1.) PAGO, one of the four iſlands of the QUARNARO, in the gulph of Venice, ſeparated from the continent of Morlachia by a narrow channel. Its figure is remarkably irregular, its breadth being in no proportion to its length. Almoſt all the circumference is diſmal, without trees or any kind of viſible plants or graſs, ſteep, craggy, and uninhabited. In general, the ſtone of the iſland is of the ſame kind as the Iſtrian, or *breccia*; and, beſides, there are large ſtrata of blue and yellowiſh ſand-ſtone. The channel, or inward bay of Pago, is a very dangerous ſtation, and even inacceſſible in winter, when the boreal wind blows with ſuch fury, that the inhabitants of the town dare not ſtir out of their houſes, and much leſs the few that are ſcattered over the country. The ſky appears always cloudy in that ſeaſon, by the thick miſt that riſes from the repercuſſion of the waves on that long chain of rough and hollow rocks. Its ancient name is ſuppoſed to have been *Portunata*. It extends from N. to S. over againſt maritime Croatia, or the mountain Morlacca. It is about 50 miles long; its breadth is unequal. It has a large internal ſalt-water lake 15 miles long from S. to N. into which the ſea enters by a canal not above a quarter of a mile broad in ſome places. This lake is frequented by the tunny fiſh. There are alſo two ſmaller lakes on the iſland; one near Vlaſſich, abounding in fiſh; and one near Slabine. In this iſland the winter is dreadfully cold, and the ſummer ſcorchingly hot. The meteors are exceedingly irregular in ſummer; ſudden whirlwinds are frequent, and heavy ſhowers of rain: the laſt are hurtful to the inhabitants of one part of the iſland, and favourable to the cultivation of the oppoſite end. They cultivate neither corn nor oil, but plenty of wine, and an immenſe quantity of ſalt. The other products are wool, honey, and ſalt fiſh. The quantity of wine amounts annually, on a medium, to 40,000 Venetian barrels; and from the huſks they diſtil 2000 barrels of *rakia* or brandy. The ſalt, in 1663, amounted to 800,000 Venetian *ſtare*. The ſalt works are well contrived and well kept: they extend along a ſhallow pool, which forms the E. extremity of the lake within, for 4 miles in length, and about half a mile in breadth. On the ſides of this fen the beſt part of the vines lie; but the upper part of the hills on each ſide is altogether naked and barren; there is not even a ſufficiency of fire-wood, and the inhabitants are obliged to provide themſelves elſewhere. The ſoil at the foot of the hills, where the vines are planted, is full of gravel and ſmall ſtones; and hence the wine is of good quality. The air is not unhealthful, notwithſtanding the vicinity of the ſalt-pits; but the high winds carry off the noxious exhalations. The greateſt part of the people live by working in the ſalt-pits, and have a comfortable ſubſiſtence regularly paid by the government. Part of the ſalt works belongs to the government, and the reſt to private proprietors; they are meliorated every year; and for that end the public lends money to thoſe proprietors who want it, and who without that aſſiſtance could not make the requiſite improvements. Hiſtorians ſay, that the iſland was often abandoned by its inhabitants; and indeed it is rather to be wondered at how men ever could reſolve to ſettle in ſo wretched a country. At Terra Vecchia alſo there is a convent of Franciſcan monks.

(2.) PAGO, the capital of the above iſland, was built by the Venetians about 300 years ago; and contains upwards of 2000 inhabitants, and all the reſt of the iſland ſcarcely 900. The difficulty of acceſs to this city, and the ill accommodation that ſtrangers meet with, make it very little frequented. Hence the inhabitants are wild and unpoliſhed. The ignorance of their clergy is incredible. There are two convents of friars in Pago, and one of nuns; and ſeveral churches, all in very bad order, and ill ſerved.

(1.) * PAGOD. *n. ſ.* [a corruption of *poutghad*, which, in the Perſian, ſignifies a houſes of idols. *Fryer's Travels.*] 1. An Indian idol.—They worſhip idols called *pagods*, after ſuch a terrible repreſentation as we make of devils. *Stillingfleet.* 2. The temple of the idol.—

See thronging millions to the *pagod* run,
And offer country, parent, wife, or ſon. *Pope.*

(2.) PAGOD, or PAGODA, § 1, *Def.* 1. See POLYTHEISM.

(3.) PAGOD, or } § 1, *Def.* 2. The beſt account
(3.) PAGODA, } of theſe Eaſt Indian temples is contained in a paper in the *Aſiatic Reſearches*, concerning the ſculptures, &c. at Mavalipuram, a few miles N. of Sadras, and known to ſeamen by the name of the *ſeven pagodas*. The monuments which Mr Chambers (who communicated the paper) deſcribes, appear, he ſays, to be the ruins of

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of ſome great city decayed many centuries ago. "They are ſituated cloſe to the ſea, between Covelong and Sadras, ſomewhat remote from the high road that leads to the different European ſettlements; and when viſited in 1776, there was ſtill a native village adjoining to them, which retained the ancient name, and in which a number of *bramins* reſided that ſeemed perfectly well acquainted with the ſubjects of moſt of the ſculptures to be ſeen there."—"Proceeding on by the foot of a hill on the ſide facing the ſea, there is a pagoda riſing out of the ground, of one ſolid ſtone, about 16 or 18 feet high, which ſeems to have been cut upon the ſpot, out of a detached rock that has been found of a proper ſize for that purpoſe. The top is arched, and the ſtyle of architecture according to which it is formed, different from any now uſed in thoſe parts." Beyond this a numerous group of human figures in bas relief, conſiderably larger than life, attract attention. They repreſent conſiderable perſons, and their exploits, many of which are now very indiſtinct through the injuries of time, aſſiſted by the corroding nature of the ſea air; while others, protected from that element, are as freſh as when recently finiſhed. The hill, which is at firſt of eaſy aſcent, "is in other parts rendered more ſo, by very excellent ſteps cut out in ſeveral places, where the communication would be difficult or impracticable without them. A winding ſtair of this ſort leads to a kind of temple cut out of the ſolid rock, with ſome figures of idols in high relief upon its walls, very well finiſhed and perfectly freſh, as it faces the weſt, and is therefore ſheltered from the ſea air." This temple our author conjectures to have been a place of worſhip appertaining to a palace; ſome remains of which ſtill exiſt, and to which there is a paſſage from the temple by another flight of ſteps. This finiſhes the objects "on that part of the upper ſurface of the hill, the aſcent to which is on the N. but, on deſcending from thence, you are led round the hill to the oppoſite ſide, in which there are ſteps cut from the bottom to a place near the ſummit, where is an excavation that ſeems to have been intended for a place of worſhip, and contains various ſculptures of Hindoo deities. The moſt remarkable of theſe is a gigantic figure of VISHNOU (ſee POLYTHEISM) aſleep on a kind of bed, with a huge ſnake wound about in many coils by way of pillow for his head; and theſe figures, according to the manner of this place, are all of one piece, hewn from the body of the rock." Theſe, works, however, although they are unqueſtionably ſtupendous, are, in our author's opinion, ſurpaſſed by others about a mile and a half S. of the hill. "They conſiſt of two pagodas of about 30 feet long by 20 feet wide, and about as many in height, cut out of the ſolid rock, and each conſiſting originally of one ſingle ſtone. Near theſe alſo ſtand an elephant full as big as life, and a lion much larger than the natural ſize, but very well executed, each hewn alſo out of one ſtone. The great rock above deſcribed is at ſome diſtance from the ſea, perhaps 50 or 100 yards, and in that ſpace the Hindoo village before mentioned ſtood in 1776. But cloſe to the ſea are the remains of a pagoda built of brick, and dedicated to Sib, the greateſt part of which has evidently been ſwallowed up by that element; for the door of the innermoſt apartment, in which the idol is placed, and before which there are always two or three ſpacious courts ſurrounded with walls, is now waſhed by the waves, and the pillar uſed to diſcover the meridian at the time of founding the pagoda is ſeen ſtanding at ſome diſtance in the ſea. In the neighbourhood of this building there are ſome detached rocks, waſhed alſo by the waves, on which there appear ſculptures, though now much worn and defaced. And the natives declared to the writer of this account, that the more aged people among them remembered to have ſeen the tops of ſeveral pagodas far out in the ſea, which being covered with copper (probably gilt) were particularly viſible at ſun-riſe, as their ſhining ſurface uſed then to reflect the ſun's rays, but that now that effect was no longer produced, as the copper had ſince become incruſted with mould and verdigris." From theſe circumſtances it is probable, that the magnificent city, of which theſe appear to be part of the ruins, has been deſtroyed partly by an earthquake, by which the rock was rent, and partly by a ſudden inundation of the ſea occaſioned by this commotion of the earth.

(4.) PAGODA, or PAGOD, is alſo the name of a gold and ſilver coin, current in ſeveral parts of the Eaſt Indies.

PAGON, or ST IGNATIUS, one of the MARIAN ISLANDS. It is 36 miles in circumference, and 30. N. of Amalagan.

PAGOUA BAY, a bay on the eaſt coaſt of Dominica. Lon. 61. 19. W. Lat. 15. 18. N.

PAGUISA, or PAQUISA, a country of South America, on the W. coaſt; 30 miles N. of Cobija. The whole interjacent coaſt is mountainous and rocky towards the NNE. Lat. 21. 55. S.

PAHA-CACHON, a town of Aſia, in Thibet.

PAHANG, a ſea-port town of Aſia, on the E. coaſt of Malacca. Lat. 3. 15. N.

PAHA-TOMKIN, a mountain of Thibet. Lon. 109. 30. E. Ferro. Lat. 30. 30. N.

PAHICH, a town of Arabia, in Hedsjas.

PAHVITTRAM, a town of Indoſtan, in the Carnatic; 14 miles ESE. of Coveriporum.

PASANA, a lake of Sweden, in Tawaſtland, above 100 miles long.

PAJAROS, or ISLANDS OF BIRDS, a cluſter of iſlands on the coaſt of Chili; 24 miles NW. of Cogilimbo Bay.

PAICHAM, a town of Chineſe Tartary. Lon. 138. 8. E. of Ferro. Lat. 42. 42. N.

* PAID. *adj.* the preterite and participle paſſive of PAY.—

This puniſhment purſues th' unhappy maid,
And thus the purple hair is dearly *paid*. *Dryd.*

PAIDORFF, a town of Germany, in Stiria; ſix miles N. of Muehrau.

(1.) * PAIGLES. *n. ſ.* [*paralyſis*, Lat.] Flowers; alſo called cowſlips. *Diſt.*

(2.) PAIGLES is a ſpecies of PRIMULA.

* PAIL. *n. ſ.* [*paila*, Spaniſh.] A wooden veſſel in which milk or water is commonly carried.—In the country, when wool is new ſhorn, they ſet *pails* of water in the ſame room, to increaſe the weight. *Bacon.*—

New milk that all the winter never fails,
And all the ſummer overflows the *pails*. *Dryden.*

* PAILFUL.

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* PAILFUL. *n. f.* [*pail* and *full*.] The quantity that a pail will hold.—Yon same cloud cannot chuse but fall by *pailfuls*. *Shak.*

PAILLES, a town of France, in the department of the Arriege, 18 miles W. of Mirepoix.

* PAILMAIL. *adj.* [The same with *pallmall*, a beater or *mall* to strike the ball.] Violent; boisterous.—A stroke with a *pailmail* beetle upon a bowl, makes it fly from it. *Digby on the Soul.*

PAIMBOEUF, a considerable sea-port town of France, in the department of the Lower Loire, on the mouth of the Loire. It is 20 miles W. of Nantes, with which it has a great trade. Lon. 1. 55. W. Lat. 47. 15. N.

PAIMPOL, a town of France, in the dep. of the North Coasts, and district of Pontrieu; 7½ miles E. of Frequier.

(1.) * PAIN. *n. f.* [*peine*, Fr. *pin*, Sax. *pœna*, Lat.] 1. Punishment denounced.—There the princesses determining to bathe themselves, thought it was so privileged a place, upon *pain* of death, as nobody durst presume to come thither. *Sidney.*—

On *pain* of death no person being so bold,
Or daring hardy, as to touch the list. *Shak.*

Interpose on *pain* of my displeasure,
Betwixt their swords. *Dryden's Don Sebast.*

—None shall presume to fly under *pain* of death. *Addison's Guardian.* 2. Penalty; punishment.—Because Eusebius hath yet said nothing, we will, by way of mulct or *pain*, lay it upon him. *Bacon.* 3. Sensation of uneasiness.—As the *pains* of the touch are greater than the offences of the other senses, so likewise are the pleasures. *Bacon.*—

Pain is perfect misery. *Milton's Par. Lost.*

He would believe, but yet is still in *pain*. *Dryd.*—What *pain* do you think a man must feel, when his conscience lays this folly to his charge? *Law.* 4. [In the plural.] Labour; work; toil.—Many have taken the *pains* to go out of Europe to reside as friars in America. *Abbot's World.*—One laboureth and taketh *pains*. *Ecclus.* xi. 11.—The *pains* they had taken was very great. *Clarendon.*—If philosophy be uncertain, the former will conclude it vain, and the latter may be in danger of pronouncing the same on their *pains*, who seek it. *Glanville.*—

High without taking *pains* to rise. *Waller.*—The deaf person must be discreetly treated, and by pleasant usage wrought upon, to take some *pains* at it. *Holder.*—If health be such a blessing, it may be worth the *pains* to discover the regions where it grows. *Temple.*—They called him a thousand fools for his *pains*. *L'Estrange.*—Some natures, the more *pains* a man takes to reclaim them, the worse they are. *L'Estrange.*—

Her nimble feet refuse
Their wonted speed, and she took *pains* to lose. *Dryden.*

The same with *pains* we gain, but lose with ease. *Pope.*

—A reasonable clergyman, if he will be at the *pains*, can make the most ignorant man comprehend what is his duty. *Swift.* 5. Labour; task. The singular is in this sense obsolete.—

He soft arrived on the grassy plain,
And fairly paced forth with easy *pain*. *Spenser.*
T'one *paine* in a cottage doth take,
When t'other trim bowers doth make. *Tusser.*

This work is hers, this is her proper *pain*. *Davies.*

When a lion shakes his dreadful mane,
And angry grows, if he that first took *pain*
To tame his youth, approach the haughty beast,
He bends to him, but frights away the rest. *Waller.*

6. Uneasiness of mind about something absent or future; anxiety; solicitude.—

It bid her feel
No future *pain* for me. *Prior.*

—If the church were once thus settled, we need then be in less *pain* for the religion of our prince. *Lesley.* 7. The throws of child-birth.—She bowed herself and travelled, for her *pains* came upon her. 1 *Sam.* iv. 19.

(2.) PAIN is an uneasy sensation, arising from a sudden and violent solution of continuity, or other accident in the nerves, membranes, vessels, muscles, &c. of the body. Pain, according to some, consists in a motion of the organs of sense; and, according to others, it is an emotion of the soul occasioned by those organs. As the brain is the seat of all sensation, so it includes that of pain. Boerhaave, and most authors on this subject, assign a stretching of the nerves as the only immediate cause of pain; but as the nerves do not appear to consist of fibres, this cause of pain does not seem to be well founded. Many kinds of pain are met with in medical authors; such as, A *gravitative* pain; in which there is a sense of weight on the part affected, which is always some fleshy one, as the liver, &c. A *pulsative* pain; which, Galen says, always succeeds some remarkable inflammation in the containing parts, and is observed in abscesses while suppurating. A *tensive* pain, which is also called a *distending* pain; it is excited by the distension of some nervous, muscular, or membranous part, either from some humour, or from flatulence. An *acute* pain is, when great pain is attended with quick and lively sensations: A *dull* pain is, when a sense of numbness is as much complained of as the pain is. The mediate and more remote causes of pain are generally obvious; and when so, the cure will consist, for the most part, in removing them; for, though in many instances the chief complaint is very distant from the seat of these causes, yet their removal is the proper method of relief. See MEDICINE, *passim*. Perhaps all pains may be included, with irritation, in those that have spasm or inflammation for their source. When pain is owing to inflammation, the pulse is quicker than in a natural state; it is also generally full, hard, and tense; the pain is equal, throbbing, and unremitting. If a spasm is the cause, the pulse is rarely affected; at intervals the pain abates, and then returns with some degree of agitation; gentle motion sometimes abates, or even cures, in some instances; but in inflammatory cases no such effects are ever experienced. See Dr Lobb's *Treatise on Painful Distempers*. The pain so frequently attendant on women in child-bed, called *after-pains* (from their happening only after being delivered of a child), are often occasioned by scooping to fetch away coagulated blood, which is a needless endeavour. When no improper treatment in delivering the secundines can be suspected, the irritability of the uterus alone is to be considered as the cause. Care should be taken not

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to confound these after pains with, or mistake the pains attending puerperal fevers for, the colic. After-pains come by fits, and soon go off; but return at different intervals, which are longer each day, and after 2 or 3 days are usually at an end, though sometimes they continue 7 or 8 days: notwithstanding these pains, the lochia flow properly, and generally more abundantly after the cessation of each fit: this does not happen in colicky complaints, nor is the belly so free from tumefaction when the puerperal fever is attendant. As these pains are of the spasmodic kind, anodynes and gentle opiates, with frequent draughts of warm candle, camomile tea, &c. are all that are required in order to their relief. See MIDWIFERY, *Part* III, *Sect.* III. Among the various causes of pain, a singular one is related in vol. 3. of the *Lond. Med. Obs. and Inq.* p. 241, &c. Some persons who had taken cold during their being salivated, were afflicted with pains which resisted all the usual methods of relief. At length the author of the narrative suggested the cause; and by exciting a fresh salivation the pains abated: the spitting was kept up a little while, and permitted to abate with some caution; and thus the cures were completed.

* *To* PAIN. *v. a.* [from the noun.] 1. To afflict; to torment; to make uneasy.—I am *pained* at my very heart. *Jer.* iv. 19.—

She drops a doubtful word that *pains* his mind. *Dryden.*

—Excess of cold as well as heat, *pains* us. *Locke.*

—Pleasure arose in those very parts of his leg, that just before had been so much *pained* by the fetter. *Addison.* 2. [With the reciprocal pronoun.] To labour. Little used.—Though the lord of the liberty do *pain himself* to yield equal justice unto all, yet can there not but great abuses lurk in so absolute a privilege. *Spenser on Ireland.*—

He *pain'd himself* to raise his note. *Dryden.*

PAI-NAM, a town of Thibet; 24 miles WSW. of Kiang-se.

PAINBŒUF. See PAIMBOEUF. *Pain-bœuf*, i. e. *bread* and *beef*, appears to be the proper orthography.

* PAINFUL. *adj.* [*pain* and *full.*] 1. Full of pain; miserable; beset with affliction.—

Is there yet no other way, besides
These *painful* passages, how we may come
To death? *Milton's Paradise Lost.*

2. Giving pain; afflictive.—Evils have been more *painful* to us in the prospect, than by their actual pressure. *Spectator.*—

The day light and the sun grow *painful* to me. *Addison.*

—Long abstinence may be *painful* to acid constitutions. *Arbuthnot.* 3. Difficult; requiring labour.—

The *painful* service,
The extreme dangers, and the drops of blood
Shed for my thankless country, are required
But with that surname. *Shak. Coriolanus.*

—When I thought to know this, it was too *painful* for me. *Psalm* lxxiii. 16.—

Surat he took, and thence preventing fame,
By quick and *painful* marches hither came. *Dryd.*

Ev'n I, tho' slow to touch the *painful* string,
Awake from slumber, and attempt to sing. *Smith.*

4. Industrious; laborious; exercising labour.—

To dress the vines new labour is requir'd;
Nor must the *painful* husbandman be tir'd. *Dryd.*

—Great abilities, when employed as God directs, do but make the owners of them greater and more *painful* servants to their neighbours. *Swift.*

* PAINFULLY. *adv.* [from *painful.*] 1. With great pain or affliction. 2. Laboriously; diligently.—Such as sit in ease at home, raise a benefit out of their hunger and thirst, that serve their prince and country *painfully* abroad. *Raleigh.*—

Robin red-breast *painfully*
Did cover them with leaves. *Children in the Wood.*

* PAINFULNESS. *n. s.* [from *painful.*] 1. Affliction; sorrow; grief.—

With diamond in window-glass she graved,
Erona die, and end this ugly *painfulness*. *Sidney.*

—No custom can make the *painfulness* of a debauch easy or pleasing to a man. *South.* 3. Industry; laboriousness.—*Painfulness*, by feeble means, shall be able to gain that which, in the plenty of more forcible instruments, is through sloth and negligence lost. *Hooker.*

(1.) * PAINIM. *n. s.* [*payen*, French.] Pagan; infidel.—The cross hath been an ancient bearing, even before the birth of our Saviour, among the *Painims* themselves. *Peacham.*—

Whole brigades one champion's arms o'erthrow,
Slay *Painims* vile that force the fair. *Tickel.*

(2.) * PAINIM. *adj.* Pagan; infidel.—

Champions bold,
Defied the best of *Painim* chivalry. *Milton.*

His moony troops returning bravely smear'd
With *Painim* blood effus'd. *Philips.*

* PAINLESS. *adj.* [from *pain.*] Free from pain; void of trouble.—He frequently blest God for so far indulging to his infirmities, as to make his disease so *painless* to him. *Fell.*—

Is there no smooth descent? no *painless* way
Of kindly mixing with our native clay?

PAINOUC, a town of Tartary. Lon. 137. 35. E. of Ferro. Lat. 41. 56. N.

PAINPONT, a town of France, in the department of the Morbihan, 6 miles SE. of Moron.

* PAINSTAKER. *n. s.* [*pains* and *take.*] Labour; laborious person.—

I'll prove a true *painstaker* day and night. *Gay.*

* PAINSTAKING. *adj.* [*pains* and *take.*] Laborious; industrious.

PAINSWICK, a town of Gloucestershire; with a market on Tuesday, and a considerable woollen manufacture of white cloths for the army, and for the India and Turkey trade. It abounds with a kind of stone, for pavement, remarkable for its beauty. As the town is seated on a high ground, it has a most extensive prospect every way, of great part of the counties of Salop, Hereford, and Monmouth; of the windings of the Severn, and of Malvern hills, &c. It is 7 miles SE. of Gloucester, and 101 W. by N. of London. Lon. 2. 11. W. Lat. 51. 46. N.

(1.) * PAINT. *n. s.* [from the verb.] 1. Colours representative of any thing.—

Poets are limners;
Words are the *paint* by which their thoughts are shown,
And nature is their object to be drawn. *Granville.*

—The church of the annunciation looks beautiful in

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in the infide, all but one corner of it being covered with ſtatues, gilding, and *paint*. *Addiſon on Italy*.—

Her charms in breathing *paint* engage. *Pope*.

2. Colours laid on the face.—

Together lay her pray'r book and her *paint*. *Anon*.

Arts on the mind, like *paint* upon the face,
Fright him, that's worth your love, from your embrace. *Young*.

(2.) PAINT, § 1, *def*. 2. See COLOUR, § XI, 1—6; COLOUR-MAKING, and PAINTING.

(1.) * *To* PAINT. *v. a.* [*peindre*, French.] 1. To repreſent by delineation and colours.—

We'll have thee as our rarer monſters are,
Painted upon a pole. *Shak. Macbeth*.

2. To cover with colours repreſentative of ſomething.—

Who fears the ſentence of an old man's ſaw,
Shall by a *painted* cloth be kept in awe. *Shak*.

3. To repreſent by colours, appearances, or images.—Till we from an author's words *paint* his very thoughts in our minds, we do not underſtand him. *Locke*.—

When folly grows romantick we muſt *paint* it. *Pope*.

4. To deſcribe; to repreſent.—The lady is diſloyal.—Diſloyal?—The word is too good to *paint* out her wickedneſs. *Shak*. 5. To colour; to diverſify.—

Such is his will that *paints*
The earth with colours freſh. *Spenſer*.

6. To deck with artificial colours, in fraud or oſtentation.—

Hath not old cuſtom made this life more ſweet
Than that of *painted* pomp? *Shakſpeare*.

—Jezebel *painted* her face and tired her head. 2 *Kings*, ix. 30.

(2.) * *To* PAINT. *v. n.* To lay colours on the face.—

To patch, nay ogle, might become a ſaint,
Nor would it ſure be ſuch a ſin to *paint*. *Pope*.

PAINTEN, a town of Bavaria, in Neuburg; 10 miles ESE. of Dietfurt, and 11 W. of Ratiſbon.

* PAINTER. *n. ſ.* [*peintre*, Fr. from *paint*.] One who profeſſes the art of repreſenting objects by colours.—In the placing let ſome care be taken how the *painter* did ſtand in the working. *Wotton*.—Beauty is only that which makes all things as they are in their proper and perfect nature; which the beſt *painters* always chuſe by contemplating the forms of each. *Dryden*.

PAINTING.

DEFINITIONS.

* PAINTING. *n. ſ.* [from *paint*.] 1. The art of repreſenting objects by delineation and colours.—If *painting* be acknowledged for an art, it follows that no arts are without their precepts. *Dryden*.—

'Tis in life as 'tis in *painting*,
Much may be right, yet much be wanting. *Prior*.

2. Picture; the painted reſemblance.—

This is the very *painting* of your fear;
This is the air-drawn dagger which you ſaid,
Led you to Duncan. *Shak*.

Painting is welcome;
The *painting* is almoſt the natural man:
For ſince diſhonour trafficks with man's nature,
He is but outſide: pencil'd figures are
Ev'n ſuch as they give out. *Shak*.

3. Colours laid on.—

If any ſuch be here
That love this *painting*, wherein you ſee me ſmear'd,
Let him expreſs his diſpoſition. *Shak*.

PAINTING is the art of repreſenting to the eyes, by means of figures and colours, every object in nature that is diſcernible by the ſight; and of ſometimes expreſſing, according to the principles of phyſiognomy, and by the attitudes of the body, the various emotions of the mind. A ſmooth ſurface, by means of lines and colours, repreſents objects in a ſtate of projection; and may repreſent them in the moſt pleaſant dreſs, and in a manner moſt capable of enchanting the ſenſes.

The art of painting is extremely difficult in the execution; and its merit can only be appreciated by thoſe who profeſs the art.

The painter who is diſtinguiſhed for noble and profound conceptions; who, by means of a perfect delineation, and colours more capable of fixing the attention and dazzling the eye, conveys to the ſpectators the ſentiments with which he himſelf was inſpired; who animates them with his genius, and makes a laſting impreſſion on their mind; this artiſt reſembles a poet, and is worthy to ſhare even in the glories of Homer.

In laying before our readers a ſuccinct account of this noble art, we ſhall, 1ſt, give the hiſtory of painting, including its riſe, progreſs, and decline, in ancient and modern times; with an account of the ſchools, and of the different merits of painters. 2dly, we ſhall lay down the principles of the art, and the order in which the artiſt conducts his ſtudies. 3dly, we ſhall enumerate the different claſſes of painting, with obſervations on each. And, 4thly, we ſhall treat of œconomical painting, or houſe-painting.

HISTORY OF THE ART.

SECT. I. *Of the* RISE, PROGRESS, *and* DECLINE *of* PAINTING, *in* ANCIENT *and* MODERN TIMES.

PAINTING originally conſiſted of ſimple outlines, and continued in this ſtate, long before the expreſſion of relievo, or the application of colour.

The next ſtep in the art was to render the imitation more complete, by applying colours: which was done in the ſame way that we colour maps; and ſeveral nations, as the Egyptians, the Chineſe, and the different nations of India, have never yet painted in a better manner. Even that great improvement in painting, the CLARO OBSCURO, was diſcovered by the Greeks, before the invention and proper application of colours.

PLATO,

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Plato, who lived 400 years before the Chriſtian era, informs us, that painting had been practiſed in Egypt for 10,000 years. Without regarding Plato's Egyptian chronology, we may conſider it as an indeterminate period, which carries us back to very remote antiquity.

The monuments of Egyptian painting with which we are beſt acquainted (ſays Winckelman) are the cheſts of mummies. Theſe works have reſiſted the injuries of time, and are ſtill ſubmitted to the examination of the curious. The white, made of white lead, is ſpread over the ground of the piece; the outlines of the figure are traced with black ſtrokes, and the colours are 4, viz. blue, red, yellow, and green, laid on without any mixture or ſhading. The red and blue prevail moſt; and theſe colours ſeem to have been prepared in the coarſeſt manner. The light is formed by leaving thoſe parts of the ground where it is neceſſary, covered with the white lead, as it is formed by the white paper in ſome of our drawings. This deſcription is ſufficient to convince us that the whole art of painting in Egypt conſiſted in colouring; but every perſon knows, that without tints and the mixture of colours, painting can never arrive at great perfection.

Pliny informs us that the Egyptian artiſts painted the precious metals; that is, they varniſhed or enamelled them. It is doubtful what this art was, but moſt probably it conſiſted in covering gold or ſilver with a ſingle colour. The Egyptians are ſuppoſed to have continued this coarſe ſtyle till the reign of the Ptolemies.

The ancient Persians were ſo far from excelling in the arts, that the paintings of Egypt were highly eſteemed among them after they had conquered that country. The only ancient painter of Perſia, whoſe name is preſerved is Manes; and he is more celebrated for his attempt to accommodate the Perſian theology of two firſt principles to the Chriſtian ſyſtem, than for his ſkill as a painter. He was famed, however, for drawing ſtraight lines without a ruler.

The modern Perſians have made no progreſs in the arts. The emperor Schah Abbas, wiſhing to be inſtructed in drawing, was obliged to have recourſe to a Dutch painter, who happened to be in his dominions. The modern Perſians paint on cloth, and the artiſts in India are their rivals in this branch of induſtry; but their paintings are merely capricious. They repreſent plants and flowers which have no exiſtence in nature; and their only merit conſiſts in the brightneſs and ſtrength of their colours.

The art in India ſeems to be confined to monſtrous figures connected with their religion. See Polytheism.

The paintings of Thibet are remarkable for the fineneſs of their ſtrokes; but in this conſiſts their only merit.

The Chinese ſeem not to have the leaſt idea of the fine arts; and they have not the ſmalleſt conception of *perſpective*. Their landſcapes have no plan, no variety in the appearance of the clouds, and no diminiſhing of the objects in proportion to their diſtance; and their repreſentations of human beings are caricatures upon the human figure.

The ancient inhabitants of Etruria, were the firſt who connected the arts with the ſtudy of nature. In ſome of their monuments which ſtill remain, there is to be obſerved a firſt ſtyle, which ſhows the art in its infancy; and a ſecond, which, like the works of the Florentine artiſts, ſhows more of greatneſs and exaggeration in the character than preciſion or beauty. Pliny ſays that painting was carried to great perfection in Italy before the foundation of Rome; but it appears that even in his time the painters of Etruria were held in great reputation. The only Etrurian paintings which remain, have been found in the tombs of the Tarquins. They conſiſt of long painted frizes, and pilaſters adorned with huge figures, which occupied the whole ſpace from the baſe to the cornice. Theſe paintings are executed on a ground of thick mortar, and many of them are in a ſtate of high preſervation.

Winckelman is of opinion, that the Greek colonies eſtabliſhed at Naples and Nola, had at a very early period cultivated the imitative arts, and taught them to the Campanians eſtabliſhed in that country. He conſiders as works purely Campanian certain medals of Capua and Teanum, cities of Campania into which the Greek colonies never penetrated.

"But there have been diſcovered (adds he) a great number of Campanian vaſes covered with painting. The deſign of the greateſt part of theſe vaſes (ſays he) is ſuch, that the figures might occupy a diſtinguiſhed place in the works of Raphael. Thoſe vaſes, when we conſider that this kind of work admits of no correction, and that the ſtroke which forms the outline muſt remain as it is originally traced, are wonderful proofs of the perfection of the art among the ancients." But the Count de Caylus is perſuaded that the Campanian vaſes are of Greek origin.

Although the hiſtory of Greek painting be more fully known, than that of the ſame art among the barbarous nations, it is nevertheleſs involved in much obſcurity. It is reaſonable to conclude, that what is called *lineary painting* was practiſed long before the time of Homer. Polygnote of Thaſos, who lived about the 90th Olympiad, or A. A. C. 420, was the firſt painter of any eminence in Greece. Pliny informs us, that he was the firſt who clothed his female figures, who varied the colours of the different parts of their dreſs, or who opened their mouths in ſuch a manner as to ſhew their teeth. But the art of painting may be ſtill conſidered in its infancy in Greece, till about A. A. C. 400, when Zeuxis and Parrhasius flouriſhed. By Apelles, Protogenes, and Euphranor, the art was carried to the greateſt height of perfection. Grace, ſymmetry, proportion, and illuſion, were now added by the greateſt maſters to the nobleſt objects of nature.

The arts were early introduced into Latium; but whether that country employed its own artiſts or thoſe of Etruria is uncertain.

In A. R. 259, and A. A. C. 494, Appius Claudius conſecrated a number of ſhields in the temple of Bellona, which contained in baſſo relievo the portraits of his family. This example was followed; and in proceſs of time it was common among the Romans to place thoſe images in pri-

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vate houſes. The execution in baſſo relievo is a proof that they had an idea of painting, at leaſt with one colour. As long as the Romans employed artiſts of other nations, they had little deſire to cultivate the arts; but about the year of Rome 450, and 303 years before Chriſt, one of the FABII employed himſelf in painting. He painted the temple of Safety; and his works remained till that temple was burnt, in the reign of Claudius. This ſame FABIUS was the firſt painter and the firſt hiſtorian in this country.

The example of Fabius, ſurnamed PICTOR from his profeſſion, did not excite his fellow citizens to imitation. A century and a half elapſed before the tragic poet PACUVIUS, nephew of Ennius, painted the temple of Hercules in the *forum boarium*. The glory which he had acquired by his dramatic works ſhed ſome luſtre on the art which he exerciſed; but did not confer on it that reſpect which could recommend it to general practice. The paintings of Fabius were the recreations of his youth; thoſe of Pacuvius, the amuſements of his old age; but painting is a difficult art, which requires a man's whole time and attention to be ſolely devoted to it.

There were in fact no eminent painters at Rome till the time of the emperors; but as the national ſpirit was changed, the profeſſion of the fine arts acquired more reſpectability. The Romans, during the time of the republic, were animated with the ſpirit of liberty and the deſire for conqueſt. When theſe two paſſions were weakened, the love of the arts obtained among them. As a proof of this, NERO himſelf gloried in being an artiſt. A Coloſſian picture of 120 feet was painted at Rome by his command, which was afterwards deſtroyed by lightning. The name of the painter is not recorded; but this is the only painting *on cloth* mentioned by ancient authors.

The paintings of the ancient artiſts were either moveable, or on the ceilings or compartments of buildings. Another to Pliny, the moſt eminent were thoſe who painted moveable pictures. The latter were either on fir wood, larch, boxwood, or canvas, ſometimes on marble. When they employed wood, they laid on firſt a white ground. Among the antiquities of the Herculaneum are 4 paintings on white marble.

Their immoveable paintings on walls, were either in freſco, or on dry ſtucco in diſtemper. Indeed all the ancient paintings may be reduced to, 1ſt, Freſco painting; 2dly, Water-colour, or diſtemper painting on a dry ground; and 3dly, Encauſtic painting. The ancient freſco paintings appear to have been always on a white ſtucco ground, the colours inlaid very deep, and the drawing much more bold and free than any ſimilar performance of modern art. The outlines of the ancient paintings on freſco were probably done at once, as appears from the depth of the inciſion and the boldneſs and freedom of the deſign, equal to the care and ſpirit of a penciled outline.

In general the ancients painted on a dry ground, even in their buildings, as appears from the Herculanean antiquities, moſt of which are executed in this manner. At Rome and Naples the firſt (deepeſt) coat is of true Puzzolana, of the ſame nature with the *terras* now uſed in mortar, required to keep out wet, about one finger thick; the next of ground marble or alabaſter, and ſometimes of pure lime or ſtucco, in thickneſs about one third of the former. Upon this they appear to have laid a coat of black, and then another of red paint; on which laſt the ſubject itſelf was executed. Such ſeems to have been their method of painting on walls; but in their moveable pictures, and in the performance of their firſt artiſts, and where the effects of ſhade and light were neceſſary, they doubtleſs uſed white.

The colours employed, they ſeem to have mixed up with ſize, of which they preferred that made by boiling the ears and genitals of bulls. This appears to have made the colours ſo durable and adhefive, that the ancient paintings lately found bear waſhing with a ſoft cloth and water; and ſometimes even diluted aquafortis is employed to clean their paintings on freſco. Pliny ſays, that glue, diſſolved in vinegar and then dried, is not again ſoluble.

What the ENCAUSTIC PAINTING of the ancients was, has been much diſputed. From the works of Vitruvius and Pliny, it appears evidently, that it was of three kinds. 1. Where a picture painted in the common way was covered with a varniſh of wax melted, diluted with a little oil, and laid on warm with a brush. 2. Where the colours themſelves were mixed up with melted wax, and the mixture uſed while warm. And, 3. Where a painting was executed on ivory by means of the *ceſtrum* or *viriculum*.

Of *white* colouring ſubſtances. The ancients had white lead variouſly prepared, a white from calcined egg-ſhells, and preparations from cretaceous and argillaceous earths. The moderns, in addition, have magiſtery of biſmuth, little uſed; and ought to have the calces of tin and zinc.

Of *blacks*, the ancients had preparations ſimilar to lamp, ivory, blue, and Frankfort black; alſo to Indian ink and common writing ink; and they uſed what we do not, the precipitate of the black dyers vats.

The ancients poſſeſſed a ſpecies of *vermilion* or fine cinnabar, a coarſer cinnabar, red lead, various earths, burnt and unburnt, apparently ſimilar to our red ochre: Venetian red, Indian red, Spaniſh brown, burnt terra de Sienna, and ſcarlet ochre; they had alſo a ſubſtance alike in colour and in name to our dragon's blood.

The *yellow* pigments of the ancients were generically the ſame with our orpiments, king's yellow, Naples yellow, &c. They did not poſſeſs turbith, mineral, mineral yellow, or gamboge; nor do they appear to have known of gall ſtone as a pigment.

Of *blue* paints, they had preparations from the lapis ſyanus and lapis armenus. Indigo they had, and perhaps bice and ſmelt; for they made blue glaſs, but whether from ſome ore of cobalt or of wolfram muſt be uncertain: they had not Pruſſian blue, verditer, nor litmus, which we have. We do not uſe the blue precipitate of the dyers vats, nor mountain blue, which they certainly employed.

Of *green* colours, they had verdegris, terra vert, and malachite or mountain green. The latter is not

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not in use among us. Sap green, green verditer, and Scheele's green, appear to have been unknown to them: like us, they procured as many tints as they pleased from blues and yellow vegetables.

We have no original *purple* in use; that from gold by means of tin, though very good when well prepared, is too dear. Their purple was a tinged earth. Their orange or sandarac (red orpiment) we also possess. Hence there does not appear to have been any great want of pigments, or any very material difference between the colours they used and such as we generally employ. Perhaps the full effect of colouring may be obtained without the use of the exceeding brilliant pigments, depending chiefly on the proportion and opposition of tints.

The ancients were undoubtedly acquainted with oil varnishes, that is, with the use and effect of resinous gums dissolved in boiling inspissated oils. One of the best preserved mummies in the British museum, has an astonishing brightness of colours on the outside of the coffin. Thousands of years have not impaired them; they are as fresh as if they had been laid on yesterday.

PLINY has described the effects of the varnish of APELLES, under the name of *atrament*. He has mentioned the shining glossy skin of the varnish, which excites the brightness of the colours, and preserves them against dust; he observed, that this skin was laid on so thin, that it could not be discerned at any distance. The chemists and connoisseurs are of opinion, that no liquid mixture of any kind is fit to produce these effects besides the oil varnishes: and therefore, that Apelles and the Greeks were certainly acquainted with those varnishes.

The black outlines of the figures on the most ancient Greek paintings yet extant, that is, on Etruscan vases, are so sharp, so thick, and drawn in so easy and masterly a manner, that one cannot help looking upon them as having been drawn in oil colours.

Yet the Greek and Roman paintings that have been preserved or discovered at Rome and Herculaneum do not countenance the supposition of oil colours; at least Turnbull and the academists at Naples, who have described the royal collection at Portici, Cochin, and many other authors who have seen and described them, do not hint any thing of that nature. On the other hand Vitruvius, who has left us so many valuable notices of the ancient arts, acquaints us, that there was a kind of painting which absolutely required a mixture of oil: And Pliny, to the same purpose, expressly says, "Sun and moon shine are inimical and obnoxious to red lead. The remedy is to apply the red wax when hot and melted, *with some oil*, on the well dried walls, which is to be done with brushes."

But, on the whole, we have no direct evidence that painting in oil was understood or practised by the ancient Egyptians, Greeks, or Romans, however nearly they may have approached towards the discovery.

The art of painting was revived in Europe about the end of the 13th or beginning of the 14th century. In Italy, where the first attempts were made, they were employed in representing the mysteries of the *passion*, and subjects of a similar nature, on the walls of chapels and churches. Their labours were directed to a vast number of figures, rather than to the beauty and perfection of each; and the art, in more modern times, has always preserved somewhat of this absurd fault which it contracted at that early period. The first thing which they discovered, or rather revived, was *perspective*, which enabled them to give more truth to their works.

DOMINIQUE GHIRLANDAIO, a Florentine, was the first who enriched the style of his composition by grouping his figures, and who gave depth to his pictures, by distinguishing, by exact gradations, the spaces which his figures occupied; but his successors have far surpassed him in boldness of composition.

LEONARD DA VINCI, Michael Angelo, Giorgion, Titian, Bartholomew De St Marc, and Raphael, flourished about the end of the 14th century. DA VINCI was the inventor of many details in the art: MICHARL ANGELO, by studying the ancients, and by his knowledge of anatomy, arrived at great elegance in drawing the outlines of his figures: GIORGION gave greater brilliancy to his colours than his predecessors. TITIAN, by a careful imitation of nature, made great proficiency in the truth and perfection of his tones: ST MARC discovered the claro-obscuro, the best manner of giving drapery to his figures, and of making the naked to be felt even when they were covered: RAPHAEL formed a style more perfect and more universal than any painter who went before, or who has succeeded him.

After Raphael had appeared, grace was the only thing wanting to the art, and CORREGIO became the Apelles of Europe. Painting was by him carried to the highest degree among the moderns; the taste of the best critics, and the eye of the vulgar were equally gratified.

After these great masters, a considerable interval elapsed till the time of the CARACCI, who by studying the works of their predecessors, became the first and the most celebrated of their imitators. The pupils of the Caracci formed a school after their manner; but GUIDO, a painter of an easy and happy talent, formed a style altogether graceful, rich, and easy. GUERSHEN formed after Caravaggio, or invented a particular style of the claro-obscuro, composed of strong shades and vivid oppositions.

PETER DE CORTONE succeeded those great imitators of their predecessors and of nature; and having great natural abilities, applied himself chiefly to composition and taste. He distinguished invention from composition; appeared not to have attended to the former, but chiefly to those parts which are most prominent in the picture, and to the the contrasting of groups.

About the middle of the 17th century flourished at Rome CHARLES MARATTI, who, aiming at the greatest perfection, carefully studied the works of the first painters, and particularly those of the school of the Caracci.

FRANCE also produced great masters, particularly in the part of composition; in which Poussin, after Raphael, is the best imitator of the style of the ancient Greeks. CHARLES LE BRUN and many others distinguished themselves for great

fertility

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fertility of genius; and as long as the French ſchool departed not from the principles of the Italian ſchool, it produced maſters of great merit in the different branches of the art.

Mengs, from whom this account is taken, declares the art of painting to have degenerated in France after Le Brun.

The firſt maſters of the great ſchools of painting, with the ancients and nature for their guides, and their genius for their ſupport, carried every part of the art to the greateſt height of perfection. Thoſe who followed them, and who had the example of their predeceſſors in addition to the firſt ſources of truth and beauty, did by no means arrive at the ſame excellence. The Caracci, in their ſchool, Paul Veroneſe, and all the painters of his time, Vandyke, and all thoſe who exerciſed the art in Italy, in Flanders, and in France, ſupported it with great brilliancy. But ſoon after the number of artiſts was multiplied; and ſlaviſhly copying men of inferior talents, they produced works of an inferior nature. Some wanting to be colouriſts, their pieces were exaggerated; others, affecting ſimplicity, became cold and inſipid. At this period of the art, men of real abilities, and covetous of fame, who wiſhed to riſe ſuperior to the mediocrity of the times, ſeem not to have taken the road of truth and nature. They affected a ſtyle of pompous preparation, and annexed a kind of merit to the expert management of the pencil. The affected forms of Cortona and of his pupils, the fantaſtical attitudes and the poignant effects of Plazetta, and in ſhort the ingenious contrivances of the laſt maſters of the French ſchool, are decided proofs of this increaſing bad taſte.

Sect. II. *Of the* Schools.

A School, in the fine arts, denominates a claſs of artiſts who have learned their art from a certain maſter, either by receiving his inſtructions, or by ſtudying his works; and who of conſequence diſcover more or leſs of his manner, from the deſire of imitation, or from the habit of adopting his principles.

All the painters whom Europe has produced ſince the renovation of the arts, are claſſed under the following ſchools, the ſchool of Florence, of Rome, of Venice, the Lombard ſchool, the French, the German, the Flemiſh, the Dutch, and the Engliſh ſchool.

The ſchool of Florence is remarkable for greatneſs: for attitudes ſeemingly in motion; for an expreſſion of ſtrength, by which grace perhaps is excluded; and for a character of deſign approaching to the gigantic.

Painting, which had languiſhed from the deſtruction of the Roman empire, was revived by Cimabue, born of a noble family in Florence, in 1240.

In 1350, the painters in Florence eſtabliſhed a ſociety under the protection of St Luke. Massolino, towards the beginning of the 15th century, gave more grandeur to his figures, adjuſted their dreſs better, and ſhed over them a kind of life and expreſſion. He was ſurpaſſed by Massacio his pupil; who firſt gave force, animation, and relievo to his works.

Andrew Castagna was the firſt Florentine who painted in oil. But Leonard Da Vinci and Michael Angelo, contemporary painters, were the glory of the School of Florence. Michael Angelo was ſuperior to Leonard in grandeur, in boldneſs of conception, and in knowledge of deſign; but Leonard was ſuperior to him in all the amiable parts of the art. Leonard, poſſeſſed of a fine imagination, and full of ſenſibility, devoted himſelf, in painting, to expreſs the affections of the ſoul; and if, in this ſublime branch of the art, he was afterwards ſurpaſſed by Raphael, he had at leaſt the glory, not only of exceeding all the painters who went before him, but of purſuing a path which none of them had attempted. His deſign was pure and neat. He never went beyond nature, and he made a good choice of objects for imitation.

Michael Angelo, leſs formed to experience ſweet affections than vehement paſſions, ſought in nature what the ſtrength of man might accompliſh, not that which conſtitutes beauty. He delighted in being great and terrible, more than in graceful and pleaſant attitudes. Well acquainted with anatomy, he knew more exactly than any other artiſt, in what manner to expreſs the joining of the bones of the body, and the office and inſertion of the muſcles: but, too eager to diſplay his knowledge of anatomy, he ſeems to have forgotten that the muſcles are ſoftened by the ſkin which covers them: and that they are leſs viſible in children, in women, and in young men, than in confirmed and vigorous manhood.

He informs us in one of his letters, that he modelled in earth or wax, all the figures which he intended to paint. This method was familiar to the great painters of his time, and ought never to be abandoned.

"Michael Angelo (ſays Sir Joſhua Reynolds) never attempted the leſſer elegancies and graces in the art. Vaſari ſays, he never painted but one picture in oil; and reſolved never to paint another, ſaying it was employment only fit for women and children.

Ancient Rome, rich with the works brought from Greece, or finiſhed in its own boſom by Grecian artiſts, handed down in its ruins the remains of that glory to which it had been elevated. By the ſtudy of theſe remains the modern artiſts were formed: they derived from them the knowledge of deſign, the beauty of exquiſite forms, greatneſs of ſtyle, and juſtneſs of expreſſion, carried to that length only which did not affect the beauty of the figure. From them alſo they derived the principles of the art of drapery. The Roman school was altogether devoted to the principal parts of the art, to thoſe which require genius and vaſt conceptions; and was no farther occupied with colours than was neceſſary to eſtabliſh a difference between painting and ſculpture, or rather between painting varied with colours, and in claro-obſcuro.

Raphael Sanzio, born at Urbino in 1483, and ſcholar to Peter Perugeno, was the undoubted founder of this ſchool. His firſt manner was that of Perugeno his maſter; but he travelled twice to Florence to ſtudy the great artiſts who flouriſhed in that city. It was fortunate for Raphael

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phael, says Mengs, that he was born in what he terms the infancy of the art, and that he formed himself by copying nature before he had access to see the works of any great master. He began by studying, with great exactness, the simple truth in his figures. He was then ignorant that any choice was necessary; but he saw the works of Da Vinci, Massacio, and Michael Angelo, which gave his genius a new direction. But the works of those masters were not sufficiently perfect to point out the best choice to make; and he continued in uncertainty till he saw at Rome the works of the ancients. Then he found the true models, and in imitating them, he had only to follow the natural impulse of his genius.

He never lost sight of nature; but he was instructed by the ancients in what manner she should be studied. He perceived, that the Greeks had selected what was great or beautiful, and that one of the chief causes of the beauty of their works was the regularity of their proportions. He saw also that the joinings of the bones, and the free play of their articulations, are the causes of all graceful movement: he therefore, was led by these observations not to be contented with the simple imitation of nature.

His design is excellent, but neither so perfect nor so finished as that of the Greeks. He excelled in representing philosophers, apostles, &c. but he did not equal the Greeks in ideal figures, which ought to carry the impression of divinity. His taste for design was more Roman than Greek, because he formed it chiefly on the basso-relievos which he found at Rome. But while he excelled in this part he did not give his figures all the elegance of the Greek artists, nor the flexibility of articulation which is admired in the *Laocoon*, in the *Apollo* of Belvidere, and in the *Gladiator*.

As RAPHAEL knew that the expression of the passions is absolutely necessary in an art which represents the actions of men, his first care, when he wanted to compose a piece, was to weigh the expression; that is, to establish, according to the nature of the subject, the passions which were to animate the characters. All the figures, all the accessories, all the parts of the composition, were moulded to the general expression. It cannot be said, however, even with regard to the claro-obscuro, that he imitated nature without taste. He delighted in what are called *masses* of light; and disposed the great lights in the most conspicuous places of his figures, whether naked or in drapery. This gives his works that distinctness which makes his figures conspicuous at a distance; and this must be allowed to be an essential part of the art of painting. He did not proceed beyond this; content with that kind of claro-obscuro which comprehends imitation, he never attempted that which is ideal.

The composition and the *ensemble* of his figures were the chief excellences of Raphael. He had too high an idea of painting to consider it as a mute art; he made it speak to the heart and soul; and he could only do this in subjects which required expression. If Raphael did not reach the Greek excellence, if he did not possess the art of embellishing nature in the same high degree, he saw at least, and imitated her in whatever was expressive and beautiful. "The Greeks sailed with majesty (says Mengs) between earth and heaven: Raphael walked with propriety on the earth."

"Composition is in general (says he) of two kinds: Raphael's is the expressive kind; the other is the theatrical or picturesque, which consists of an agreeable disposition of the figures. LANFRANC was the inventor of this last, and after him Cortona. I give the preference to Raphael; because reason presides over all his works, or at least the greatest part of them."

A masterly contrast between Angelo and Raphael is given by Sir Joshua Reynolds. "If we put those great artists (says he) in comparison with each other, Raphael had more taste and fancy, Michael Angelo more genius and imagination. The one excelled in beauty, the other in energy. Michael Angelo has more of the poetical in operation; his ideas are vast and sublime. Raphael's imagination is not so elevated, though his ideas are chaste, noble, and of great conformity to their subjects." &c.

The VENETIAN SCHOOL is the child of nature. The Venetian painters, not having under their eyes, like the Roman, the remains of antiquity, were destitute of the means of forming a just idea of the beauty of forms and of expression. They copied without choice the forms of nature; but they were chiefly delighted with the beauties which presented themselves in the mixture and the variety of natural colours. Colouring was their chief object, and they succeeded in it. They endeavoured, by the agreement and opposition of the coloured objects, and by the contrast of light and shade, to produce a vigorous effect, to demand and fix the attention. Dominic, who was the second Italian artist who painted in oil, had educated, before he quitted Venice, his native country, James Bellin, whose chief merit lay in the picturesque education he gave to Gentel and John his two sons.

GENTEL, the eldest, painted chiefly in water colours. John contributed much to the progress of his art in painting constantly in oil, and after nature. Although he always retained great stiffness in his manner, he had less than his father or brother. Great neatness of colouring, and an approach to harmony, are evident in his works. His taste in design is Gothic, the air of his heads is sufficiently noble, his attitudes are without judgment, and his figures without expression. He had for scholars Giorgion and Titian, who are considered as the founders of the Venetian school.

GIORGION distinguished himself by a design of a better taste than that of his master; but he chiefly surpassed him in colouring. He died in his 32d year; and excited the emulation of Titian, who soon greatly excelled him.

TIZIANO VECELLI, best known by the name of TITIAN, was instructed to copy nature in the most servile manner in the school of John Bellin; but when he had seen the works of Giorgion, he began to study the ideal in colouring. The truth of history is not to be expected in his historical paintings, or in those of the artists of the same school. He seems to have paid little attention to the consistence of scene, to the costume, to expression adapted to the subject, or, to the accommodation of parts which characterise the works of

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of those who have studied the ancients. He was in short a great painter and nothing more. But although he deserves not to be placed among the the most distinguished artists in point of judgment, yet he is by no means destitute of great and noble conceptions. There is often to be found among his male figures a considerable degree of grandeur. The beauties of his works consist in the happy dispositions of colours both proper and local, and he carries this to the highest point of perfection.

The artists in the Florentine and Roman schools painted most commonly in water colours or in fresco; and they finished their works from their first sketches. Titian painted in oil, and finished from the objects in nature; and this practice, joined to his exquisite talents, gave the greatest truth to his colours. His being a portrait-painter was also of advantage to him as a colourist. In this department he was accustomed to the colours of nature in carnations and draperies. He was a landscape-painter; and here also he took the colours from nature.

Titian has in general little expression in his pictures, and he sometimes introduces figures which augment the coldness of the piece. But the colours of his paintings are so mingled together as to give no idea of the colours on his pallet; which distinguishes him from Rubens, who placed his colours one at the side of another. It is impossible to say, on the narrowest inspection, with what colours he produced his tints. This practice, which enabled him to imitate so exactly the colours of nature, gives a marked distinction to his manner of painting. He is one of the few historical painters who have succeeded in landscape. His situations are well chosen; his trees are varied in their forms, and their foliage well conceived. He often represented some remarkable appearance in his landscapes to render them more striking.

The distinguishing characteristics of the Lombard school are, grace, an agreeable taste for design, without great correction, a mellowness of pencil, and a beautiful mixture of colours. Antony Allegri, or Correggio, was the father and greatest ornament of this school. He began to imitate nature alone; but, as he was chiefly delighted with the graceful, he was careful to purify his design from all short turnings and unnecessary angles. He perceived that largeness contributed to grace; and therefore not only rejected all small figures, but enlarged as much as possible the outlines, avoided acute angles and straight lines, and by these means gave an easy grandeur to his design. He made his figures elegant and large; he varied the outlines by frequent undulations; but he was not always pure and correct.

Correggio painted in oil, a kind of painting susceptible of the greatest delicacy and sweetness; and as his character led him to cultivate the agreeable, he gave a pleasing captivating tone to all his pictures. He sought transparent colours to represent shades conformable to nature, and adopted a manner of glazing which actually rendered his shadows more obscure. But it is chiefly in the colour of his shades that he deserves to be imitated. He excelled also in harmony. As the delicacy of his taste suffered him not to employ strong oppositions, he became a great master in this part, which chiefly consists of easy gradations from one extreme to another. He was harmonious in his design, by making the lines which formed the angles of the contour arched and undulated. The delicacy of his organs made him perceive what relief was necessary to the eye after a violent exertion; and he was careful to follow a bold and prevailing colour with a demi-tint, and to conduct the eye of the spectator, by an invisible gradation, to its ordinary state of tention. A delicate taste in colours, a perfect knowledge of the claro-obscuro, the art of uniting light to light, and shade to shade, together with that of detaching the objects from the ground, inimitable, grave, and perfect harmony, were the qualities which distinguished Correggio from all the painters, and placed him near the head of his profession.

The Caracci, Lewis, Augustin, and Hannibal, formed what is called the *second Lombard school*, which is frequently distinguished by the name of the *school of Bologna*. Lewis was the master of the other two; he had studied the works of Titian and Paul Veronese at Venice, those of Andrew Del Sarte at Florence, those of Correggio at Parma, and those of Julius Romano at Mantua; but he chiefly endeavoured to imitate the manner of Correggio. Hannibal fluctuated between Correggio and Titian. Augustin had his mind cultivated by learning, and devoted part of his time to poetry, music, &c. These three painters often employed their talents on the same piece; and seemed to be animated with the same spirit.

They established an academy at Bologna, which their zeal for the advancement of their art made them call *l'Academia degli Desiderosi*; but it was afterwards called the *Academy of the Caracci*, from their high reputation. In this school were taught the art of constructing models, perspective, and anatomy; lessons were given on the beautiful proportions of nature, on the best manner of using colours, and on the principles of light and shade. They held frequent conferences, in which not only artists, but men of general knowledge, were permitted to elucidate points relative to the art of painting: but they were separated upon Hannibal's going to Rome to adorn the gallery of the cardinal Farnese.

The works of the Caracci are often, from the resemblance of their manner, confounded together. But each of them has a decided character distinct from the other two. Lewis had less fire, but more of gracefulness and grandeur: Augustin had more spirit in his conception, and more pleasantness in his execution: Hannibal is characterized by boldness, by a design more profound, by an expression more lucky, and by an execution more solid. Sir Joshua Reynolds considers Lewis the best model for what is called *style* in painting; which is the faculty of disposing colours in such a manner as to express our sentiments and ideas.

Hannibal is esteemed by the best judges as a model for beauty and design.

The French school has been so different under different masters, that it is difficult to characterize its

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it. It appears indeed to have no peculiar character; it can only be diſtinguiſhed by its aptitude to imitate eaſily any impreſſion.

It is equally difficult to determine the progreſs of painting in FRANCE. Miniature painting and painting on glaſs were early cultivated in that country, and in theſe two kinds the Italians had often recourſe to the French artiſts. When Francis I. encouraged Roſſo, a Florentine, and Primatice, a Bolognian, the painters in France were not remarkable for any ſuperior talent. COUSIN, a painter on glaſs and portrait painter, was the firſt who eſtabliſhed any kind of reputation in France. He was correct, but poſſeſſed very little elegance of deſign.

Painting, for ſome time encouraged by Francis I. fell into a ſtate of langnor, from which it was not recovered till the reign of Lewis XIII. James Blanchard, formed at the Venetian ſchool, and called *the French Titian*, flouriſhed about this period; but he died young, and without educating any pupils to perpetuate his manner.

POUSSIN, one of the greateſt French painters, and whom they call the *Raphael of France*, educated no pupils, nor formed any ſchool. His ſtyle and character of painting are deſcribed by Sir Joſhua Reynolds as ſimple, careful, pure, and correct.

SIMON VOUET had a kind of grandeur and facility; but his deſign was falſe with regard to colours, and without expreſſion. He laid the foundation of the French ſchool, and LE BRUN finiſhed the edifice.

LE BRUN had a noble conception and a fruitful imagination. He chiefly excelled in rigorous coſtume and exact likeneſſes. Few painters have united ſo great a number of eſſential qualities and acceſſories of the art. He was a good drawer. In drapery he followed the Roman ſchool. He had ſtudied the expreſſion of the affections, as is evident from his *Treatiſe on the character of the paſſions*; but, after obſerving the general characters, and eſtabliſhing the principal ſtrokes of expreſſion, he thought he had reached the whole extent of this ſubject, which is ſo infinitely extended. He neglected to ſtudy the prodigious variety of gradations by which the interior affections are manifeſted in the exterior appearance. He poſſeſſed in a high degree the grand machine of the art, but he wanted the vigour and inſpiration of Raphael.

The ſweet attractions, and ſtrong and ſolid colours, of the ſchools of Rome and Lombardy ſeem to have been the objects of Le Brun's imitation; and from them alſo he learned an eaſy, agreeable, and bold management of the pencil. As Le Brun poſſeſſed a great ſhare of lively imagination, he delighted in allegory, which gives the greateſt ſcope for ingenious invention.

EUSTACE LE SUEUR was the cotemporary and rival of Le Brun; and no painter approached nearer to Raphael in the art of drapery, and in diſpoſing the folds in the moſt artful and the nobleſt manner. Like Raphael, he repreſented with art and preciſion the affections of the ſoul; like him, he varied the air of the head, according to the condition, the age, and the character of his perſonages; and, like him, he made the different parts of every figure contribute to the general effect. His tones are delicate, his tints harmonious, and his colours engaging.

In GERMANY there can hardly be ſaid to be a ſchool, as it is a continuation of ſingle artiſts, who derived their manner from different ſources of originality and imitation. There were ſome German painters of eminence, when the art, emerging from its barbarous ſtate, firſt began to be cultivated with ſucceſs in Europe. As they were totally unacquainted with the ancients, and had ſcarcely acceſs to the works of their cotemporaries in Italy, they copied nature alone, with the exception of ſomewhat of that ſtiffneſs which forms the Gothic manner. It is this manner, if we ſpeak of the early German painters, which characteriſes their ſchool. But this is by no means the caſe with their ſucceſſors, part of whom were educated in Flanders, and part in Italy; for if MENGS or Dietrich were comprehended in this ſchool, there would be nothing peculiar to its manner diſcovered in their works.

ALBERT DURER was the firſt German who corrected the bad taſte of his countrymen. He excelled in engraving as well as painting. His genius was fertile, his compoſitions varied, his thoughts ingenious, and his colours brilliant. He is blamed for ſtiffneſs and aridity in his outlines, and other defects; but he had carefully ſtudied lineal perſpective, architecture, and fortification.

JOHN HOLBEIN, nearly contemporary with Albert Durer, painted in oil and water colours. He excelled chiefly in hiſtory and in portrait painting. His colours are freſh and brilliant, and his works are highly finiſhed; but in his hiſtorical ſubjects, his draperies are not in ſo good a taſte as thoſe of Albert.

The Flemiſh ſchool is recommended to the lovers of the art by the diſcovery, or at leaſt the firſt practice of OIL PAINTING. JOHN VAN EYCK is ſaid to have been the fortunate diſcoverer; but it is proved by the MSS. of Theophilus Preſbyter, and by ſome old oil paintings in England, that this method of painting was diſcovered long before his time.

JOHN DE BRUGES was the founder of painting as a profeſſion in Flanders; PETER PAUL RUBENS was the founder of the art. This extraordinary perſon produced an immenſe number of works. He excelled equally in hiſtorical, portrait, and landſcape painting; in fruits, flowers, and in animals. He both invented and executed with the greateſt facility; and to ſhow the extent of his powers, he often made a great number of ſketches of the ſame ſubject altogether different, without allowing any time to elapſe between them. The works of Rubens were deſtitute of that ſoft inſpiration, ſo conſpicuous in the works of Raphael; but he poſſeſſed that ſprightlineſs of genius and ſtrength of mind which is ever ready to burſt forth in aſtoniſhing effects. On every occaſion his deſign is noble and eaſy. He had great knowledge of anatomy, but he was hurried away by the impetuoſity of his imagination and the ardour for execution; he preferred ſplendor to the beauty of forms, and ſacrificed correctneſs of deſign too often to the magic of colours. In ſhort, his qualities ſuppoſe a mind full of fire and

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vigour, rather than accuracy or profound thought. In his colouring he is more dazzling than Titian, but the latter is more harmonious.

The FLEMISH SCHOOL, of which Rubens is the greateſt maſter, is remarkable for great brilliancy of colours and the magic of the *claro obſcuro*. To theſe may be joined a profound deſign, which is not yet founded on the moſt beautiful forms; a compoſition poſſeſſed of grandeur, a certain air of nobleneſs in the figures, ſtrong and natural expreſſions; in ſhort, a kind of national beauty, which is neither copied from the ancients nor from the Roman nor Lombard ſchools, but which deſerves to pleaſe, and is capable of pleaſing.

The DUTCH SCHOOL carries none of the above qualities to great perfection, except that of colouring. Far from excelling in the beauty of heads and forms, they chiefly delight in the exact imitation of the loweſt and moſt ignoble. Their ſubjects are derived from the tavern, the ſmith's ſhop, and the vulgar amuſements of the rudeſt peaſants. The expreſſions are ſufficiently marked; but it is the expreſſion of paſſions which debaſe, inſtead of ennobling, human nature. One would think that they practiſed the art of degrading the bodies and ſouls of men. It muſt be acknowledged, however, that the Dutch painters have ſucceeded in ſeveral branches of the art. If they have choſen low objects of imitation, they have repreſented them with great exactneſs; and truth muſt always pleaſe. If they have not ſucceeded in the moſt difficult parts of the claro-obſcuro, they at leaſt excel in the moſt ſtriking; ſuch as in light confined in a narrow ſpace, night illuminated by the moon or by torches, and the light of a ſmith's forge. The Dutch underſtand the gradations of colours; and by their knowledge of contraſt they have arrived at the art of painting light itſelf. They have no rivals in landſcape painting, conſidered as the faithful repreſentation or picture of a particular ſcene; but they are far from equalling Titian, Pouſſin, Claude, Lorrain, &c. who have carried to the greateſt perfection the ideal landſcape, and whoſe pictures, inſtead of being the topographical repreſentation of certain places, are the combined reſult of every thing beautiful in imagination or in nature. The Dutch, however, diſtinguiſh themſelves by their perſpective, by their clouds, ſea-ſcenes, animals, fruits, flowers, and inſects; and they excel in miniature painting. In ſhort, every thing which requires a faithful imitation, colour, and a nice pencil, is well executed by the Dutch painters.

HOLLAND has alſo produced hiſtory painters, as Octavius Van Been, and Vander Hilſt, the rival of Vandyke, and perhaps his ſuperior; but it is not in the works of theſe artiſts that we find the character of the Dutch ſchool. Neither is the origin of their ſtyle to be derived from the works of LUCAS of Leyden, though, from the time he flouriſhed, viz. about the end of the 15th century, he may be conſidered as the patriarch of the Dutch ſchool. Lucas painted in oil, in water colours, and on glaſs; and the kinds of his painting were hiſtory, landſcape, and portrait.

If MINIATURE PAINTING be conſidered as a characteriſtic of the Dutch ſchool, CORNELIUS POLEMBOURG may be regarded as the father of it. He poſſeſſed the colour, delicacy of touch, and diſpoſition of the claro obſcuro, which chiefly diſtinguiſh this ſchool; and if any thing is to be added, it is want of correctneſs in his deſign. But if the choice of low figures is its chief characteriſtic, this is to be found in the greateſt perfection in the works of the celebrated REMBRANDT VANRYN; and it is the more offenſive in this artiſt, as his compoſitions frequently required an oppoſite choice of figures.

REMBRANDT may be compared to the great artiſts for colour and delicacy of touch and claro-obſcuro. He delighted in the great oppoſitions of light and ſhade. His expreſſions are juſt, lively, and executed with great judgment.

JOHN DE LAER, a miniature painter, had a correct deſign, and employed vigorous and lively colouring.

VAN OSTADE, although born at Lubeck, Gerard Dow, Metzu, Miris, Wouwermans, Berghem, and the celebrated painter of flowers, Van Huyſum, belong to the Dutch ſchool. The greater part of the ſchools of which we have treated have no longer any exiſtence. Italy alone had four ſchools, and there only remain at preſent a very few Italian artiſts known to foreigners. The ſchool of Rubens is in vain ſought for in Flanders. If the Dutch ſchool ſtill exiſts, it is not known beyond the precincts of Holland. Mengs, a German artiſt, has made himſelf famous; but it was in Italy that he chiefly improved his talents and exerciſed his art. M. Dietrich, another German, has made himſelf known to ſtrangers; but two ſolitary artiſts do not form a ſchool.

A new ſchool is formed in our times, and in our own country, called the ENGLISH SCHOOL. It is connected with the academy in London, inſtituted in 1766 by letters patent from the king, and formed in 1769. Sir JOSHUA REYNOLDS is the undoubted founder of it. His works give him a diſtinguiſhed rank among the artiſts of the preſent age, and exhibit a genius in their author, which has ſeldom been ſurpaſſed; but the effects which he has contrived to give to them by the formation of a new ſchool, and by the good principles which his diſcourſes to academicians, and his example as a painter, have diſſeminated, will ſecure his reputation as long as England ſhall eſteem great abilities. The Engliſh taſte appears to be formed on the great maſters of the Italian and Flemiſh ſchools. Sir Joſhua was a great admirer of Michael Angelo, and particularly recommends him to the attention of the academicians.

The effect of Sir Joſhua's diſcourſes is viſible in the pictures of this ſchool. The Death of General Wolf, the Departure of Regulus for Carthage, the Arrival of Agrippina, and ſome other ſubjects, are decided proofs that the Engliſh ſchool is acquainted with greatneſs of ſtyle, boldneſs of expreſſion, and the art of managing a great number of figures. It will be fortunate for the painters of this ſchool, if, more rigid with regard to their forms than ambitious of poignant and aſtoniſhing effects, they ſupport the character which they have already acquired.

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PART I.

PRINCIPLES OF THE ART, AND THE ORDER OF THE ARTIST'S STUDIES.

THE principles of the art and the order of the artist's ſtudies muſt be treated of together, becauſe they are like cauſe and effect; and comprehend, both on what parts in the execution of the art the painter is to employ his chief attention, and alſo the manner in which he is to employ it. We ſhall therefore treat of both in that order in which it appears to us they ſhould be ſtudied.

SECT. I. *Of* ANATOMY.

IT is unneceſſary to ſpend many words or much time in proving, that a painter ſhould be acquainted with anatomy; or in ſhowing how far his acquaintance with it ſhould extend. He needs not indeed to enter into the different ſyſtems of the nerves, blood-veſſels, bowels, and the like; parts which are removed from the ſight, and the ſtudy of which may therefore be left to the ſurgeon and the phyſician, as a guide in the operations of the former, and in the preſcriptions of the latter. It is enough for the painter to be acquainted with the ſkeleton; with the figure and connection of the bones, which are, in a manner, the pillars and props of the human body; the origin, progreſs, and ſhape of the muſcles which cover theſe bones; the different degrees in which nature has clothed the muſcles with fat, for this ſubſtance lies thicker upon them in ſome places than in others. Above all, he ſhould know in what manner the muſcles affect the various motions and geſtures of the body. This knowledge is to be acquired from the treatiſes of Moro, Ceſio, Tortebat, Boucherdon, and others; from anatomical caſts, and from the ſtudy of human ſubjects, living and dead.

SECT. II. *Of* PERSPECTIVE.

THE ſtudy of perſpective ſhould go hand in hand with that of anatomy, as not leſs fundamental and neceſſary. In fact, the contour of an object, drawn upon paper or canvas, repreſents nothing more than ſuch an interſection of the viſual rays ſent from the extremities of it to the eye, as would ariſe on a glaſs put in the place of the paper or canvas. Now, the ſituation of an object at the other ſide of a glaſs being given, the delineation of it on the glaſs itſelf depends entirely on the ſituation of the eye on this ſide of the glaſs; that is to ſay, on the rules of perſpective; a ſcience which, contrary to the opinion of moſt people, extends much farther than the painting of ſcenes, floors, and what generally goes under the name of *quadratura*. Perſpective teaches in what proportion the parts fly from, and leſſen upon, the eye; how figures are to be marſhalled upon a plain ſurface, and fore-ſhortened. It contains, in ſhort, the whole rationale of deſign.

When a painter has formed a ſcene in his mind, and ſuppoſed that the capital figures of this ſcene lie cloſe, or almoſt cloſe, to the back of his canvas, he is next to fix upon ſome point on this ſide of the canvas, from which he would chooſe his piece ſhould be ſeen. But in chooſing this point which is called the *point of ſight*, regard ſhould be had to its ſituation to the right or left of the middle of the canvas; but, above all things, to its diſtance and its height with reſpect to the lower edge of the canvas; which edge is called the *baſe line*, and is parallel with the horizontal line that paſſes through the eye For, by aſſuming the point of ſight, and conſequently the horizontal line, too low, the planes upon which the figures ſtand will appear a great deal too ſhallow; as, by aſſuming it too high, they will appear too ſteep, ſo as to render the piece far leſs light and airy than it ought to be. In like manner, if the point of ſight is taken at too great a diſtance from the canvas, the figures will not admit of degradation enough to be ſeen with ſufficient diſtinctneſs; and if taken too near it, the degradation will be too quick and precipitate to have an agreeable effect.

The point of ſight being fixed upon, according to the ſituation in which the picture is to be placed, the point of diſtance is next to be determined. In doing this, a painter ſhould attend to three things; 1ſt, that the ſpectator may be able to take in, at one glance, the whole and every part of the compoſition; 2dly, that he may ſee it diſtinctly; and, 3dly, that the degradation of the figures and other objects of the picture be ſufficiently ſenſible.

But there is a point ſtill remaining, which will not admit of the leaſt latitude. This is, the delineation of the picture, when once the point of ſight has been fixed upon. The figures of a picture are to be conſidered as ſo many columns erected on different ſpots of the ſame plane; and the painter muſt not think of deſigning any thing till he has laid down, in perſpective, all thoſe columns which are to enter his compoſition, with the moſt ſcrupulous exactneſs. By proceeding in this manner, he may not only be ſure of not committing any miſtake in the diminution of his figures according to their different diſtances, but may flatter himſelf with the thoughts of treading in the ſteps of the greateſt maſters. To the punctual obſervance of theſe laws, is attributed the grand effect of ſome paintings by Carpazio and Mantegna, while a ſingle fault againſt them is ſufficient to ſpoil the works of a Guido, in ſpite of the ſublimity and beauty of his ſuperior ſtyle.

Now, as the demonſtration of the rules of perſpective depends on the doctrine of proportions, on the properties of ſimilar triangles, and on the interſection of planes, it will be proper to put an abridgment of Euclid into the hands of a young painter, that he may underſtand theſe rules fundamentally, and not be confined to a blind practice of them; but there is nothing in this author relative to the art of painting, which may not be eaſily acquired in a few months.

But though a much longer time were requiſite to become a perfect maſter of perſpective, a painter ſurely ought not to grudge it; as no time can be too long to acquire that knowledge, without which he cannot poſſibly expect to ſucceed. Nay, we may boldly affirm, that the ſhorteſt road in every art is that which leads through theory to practice. From theory ariſes that great

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facility, by means of which a man advances the quicker, in proportion as he is ſure of not taking a wrong ſtep: whilſt thoſe who are not grounded in the ſcience labour on in perpetual doubt.

As practice, therefore, ought in every thing to be built upon principle, the ſtudy of OPTICS, as far as it is requiſite to determine the degree in which objects are to be illuminated or ſhaded, ſhould proceed hand in hand with that of perſpective; in order that the ſhades, caſt by figures upon the planes on which they ſtand, may fall properly, and be neither too ſtrong nor too light: in a word, that thoſe moſt beautiful effects of the chiaro-ſcuro may run no riſk of ever receiving the lie from truth, which ſooner or later diſcovers itſelf to every eye.

SECT. III. *Of* SYMMETRY.

THE ſtudy of ſymmetry, it is obvious, ſhould immediately follow that of anatomy; for it would avail us little to be acquainted with the different parts of the human body, and their ſeveral offices, were we at the ſame time ignorant of the order and proportion of thoſe parts in regard to the whole in general, and to each other in particular. The Greek ſtatuaries diſtinguiſhed themſelves above all others, as much by the juſt ſymmetry of their members, as by their ſkill in anatomy.

A young painter ſhould therefore copy the Greek ſtatues often. It is indeed impoſſible he ſhould copy them too often. Great care, however, is neceſſary, leſt, by too ſlaviſh an attention to ſtatues, the young painter may contract a hard and dry manner; and by ſtudying anatomies too ſervilely, a habit of repreſenting living bodies as ſtripped of their ſkin: for nothing but what is natural, that, beſides a certain peculiar grace and livelineſs, poſſeſſes that ſimplicity, eaſe, and ſoftneſs, which is not to be expected in the works of art, or even in thoſe of nature deprived of life, can give ſatisfaction in painting.

SECT. IV. *Of* IMITATION.

IMITATION is the firſt part of the art of painting, though not the moſt excellent. Whatever a young painter's natural diſpoſition may be, whether to paint boldly and freely like Tintoret and Rubens, or to labour his works like Titian or Da Vinci, let him follow it. This kind of imitation is very commendable.

Nothing ſhould hinder an able maſter from making uſe now and then of any antique, or even modern figure, which he may find his account in employing.

A painter ſhould have his eye conſtantly fixed on nature, that inexhauſtible and varied ſource of every kind of beauty; and ſhould ſtudy to imitate her in her moſt ſingular effects. He ſhould never be without his little book and crayon, to make drawings of every beautiful or uncommon object that may happen to preſent itſelf. He may afterwards employ theſe ſketches as occaſions offer; and in the mean time will have the advantage of acquiring a grand taſte.

It is by carefully ſtudying the beſt maſters, and imitating nature, that a painter arrives at the ſtyle of perfection which the Italians call *guſto grando*, the French *le beau ideal*, and the Engliſh *the great ſtyle*.

"It is a neceſſary warrantable pride, (ſays Sir J. Reynolds,) to diſdain to walk ſervilely behind any individual, however elevated his rank. The true and liberal ground of imitation is an open field, where, though he who precedes has had the advantage of ſtarting before you, yet it is enough to purſue his courſe: you need not tread in his footſteps; and you certainly have a right to outſtrip him if you can."

SECT. V. *Of* COLOURING.

COLOURING, though a ſubject greatly inferior to many others which the painter muſt ſtudy, is yet that which ought to be particularly enlarged on here. To excel in it, he muſt be well acquainted with that part of OPTICS, which has the nature of light and colours for its object. Light, however ſimple and uncompounded it may appear, is nevertheleſs made up, as it were, of ſeveral diſtinct ſubſtances; and the number, and even doſe, of theſe ingredients, has been happily diſcovered by the moderns. Every undivided ray, let it be ever ſo fine, is a little bundle of red, orange, yellow, green, azure, indigo, and violet rays, which, while combined, are not to be diſtinguiſhed one from another, and form that kind of light called *white*; ſo that white is not a colour *per ſe*, as DA VINCI affirms, but an aſſemblage of colours. Now, theſe colours, which compoſe light, although immutable in themſelves, and endued with various qualities, are continually, however, ſeparating from each other in their reflection from and paſſage through other ſubſtances, and thus become manifeſt to the eye. Graſs, for example, reflects only green rays, or rather reflects green rays in greater number, than it does thoſe of any other colour; one kind of wine tranſmits red rays, and another yelloviſh rays: and from this kind of ſeparation ariſes that variety of colours with which nature has diverſified her various productions. Man, too, has contrived to ſeparate the rays of light, by making a portion of the ſun's beams paſs through a glaſs priſm; for after paſſing through it, they appear divided into 7 pure and primitive colours, placed in ſucceſſion one by the other, like ſo many colours on a painter's pallet. See CHROMATICS, and OPTICS.

Now, though TITIAN, CORREGIO, and VANDYKE, have been excellent coloriſts, without knowing any thing of theſe phyſical phenomena, yet now that they are diſcovered and aſcertained, every painter ought to be well acquainted with them, as with theſe colours he is to give life and perfection to his deſigns. From a due tempering of the tints in a picture; from making colours partake of each other, according to the reflection of light from one object to another; there ariſes, in ſome meaſure, that ſublime harmony which gives pleaſure to the lovers of the art. And this harmony has its foundation in the genuine principles of optics. For though colours are in their own nature immutable one into another, and every body reflects, more or leſs, every ſort of coloured rays, but thoſe rays in the greateſt number which are of the colour it exhibits, there muſt ariſe, in colours

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colours placed near one another, certain particular temperaments of colour: nay, this influence of one colour upon another may be so far traced, that three or four bodies of different colours, and likewise the intenseness of the light falling upon each, being assigned, we may easily determine in what situations, and how much they would tinge each other. We may thus, too, by the same principle, account for several other things practised by painters: insomuch that a person, who has carefully observed natural effects, shall be able to form general rules, where another can only distinguish particular cases.

After all, the pictures of the best colourists are sources from which a young painter must chiefly look for the rules of colouring; that is, of that branch of painting which contributes so much to express the beauty of objects, and is so requisite to represent them as they really are. Giorgio and Titian seem to have discovered circumstances in nature which others had overlooked; and the last has expressed them in the most delicate manner. In his works we behold that sweetness of colouring which is produced by union; that beauty which is consistent with truth; and all the insensible transmutations, all the soft transitions, of tints and colours. When a young painter has, by close application, acquired from Titian that art, which of all painters he has best contrived to hide, he would do well to turn to Bassano and Paolo, on account of the beauty, boldness, and elegance, of their touches. That richness, softness, and freshness of colouring, for which the Lombard school is so justly famed, may likewise be of great service to him. Nor will he reap less benefit by studying the principles and practice of the Flemish school; who, chiefly by means of their varnishes, have given a most enchanting lustre and transparency to their colours.

But whatever pictures a young painter may choose to study the art of colouring upon, he must take great care that they are well preserved. There are very few pieces which have not suffered more or less by time; and perhaps that precious PATINA, which years alone can impart to paintings, is in some measure akin to that other kind which ages alone impart to medals; inasmuch as, by giving testimony to their antiquity, it renders them proportionably beautiful in the superstitious eyes of antiquaries. It must indeed be allowed, that if, on the one hand, this patina bestows, as it really does, an extraordinary degree of harmony upon the colours of a picture, and destroys, or at least greatly lessens, their original rawness; it, on the other hand, equally impairs the freshness and life of them. A piece seen many years after it has been painted, appears much as it would do, immediately after painting, behind a dull glass. It is no idle opinion, that Paul Veronese, attentive above all things to the beauty of his colours, and what is called *strepito*, left entirely to time the care of harmonizing them perfectly, and (as we may say) *mellowing* them. But most of the old masters took that task upon themselves; and never exposed their works to the eyes of the public, until they had ripened and finished them with their own hands. And who can say whether the *Christ of Mengs*, or the *Nativity* of Bassano, have been more improved or injured (if we may so speak) by the touchings and retouchings of time, in the course of more than two centuries? It is indeed impossible to be determined. But the studious pupil may make himself ample amends for any injuries which his originals may have received from the hands of time, by turning to truth, and to Nature, which never grows old, but constantly retains its primitive flower of youth, and was itself the model of the models before him. As soon, therefore, as a young painter has laid a proper foundation for a good colouring, by studying the best masters, he should turn all his thoughts to truth and nature. And it would perhaps be well worth while to have, in the academies of painting, models for colouring as well as designing; that, as from the one the pupils learn to give their due proportion to the several members and muscles, they may learn from the other to make their carnations rich and warm, and faithfully copy the different local hues which appear quite distinct in the different parts of a fine body. To illustrate still farther the use of such a model, let us suppose it placed in different lights; now in that of the sun, now in that of the sky, and now again in that of a lamp or candle; one time in the shade, and another in a reflected light. Hence the pupil may learn all the different effects of the complexion in different circumstances, whether the livid, the lucid, or transparent; and, above all, that variety of tints and half-tints, occasioned in the colour of the skin by the epidermis having the bones immediately under it in some places, and in others a greater or less number of blood-vessels or quantity of fat. An artist who had long studied such a model, would run no risk of degrading the beauties of nature by any particularity of style, or of copying that preposterous fulness and floridness of colour which is at present so much the taste. To practise in this manner, is no better than inuring one's self to the commission of blunders. What statues are in design, nature is in colouring; the fountain-head of that perfection to which every artist, ambitious to excel, should constantly aspire: and accordingly, the Flemish painters, in consequence of their aiming solely to copy nature, are in colouring as excellent as they are wont to be awkward in designing. The best model for the tone of colours and the degradations of shade, is furnished by means of the *camera obscura*. See DIOPTRICS, *Index*.

SECT. VI. *Of* DRAPERY.

DRAPERY is a most important branch of the art: It seldom happens that a painter has nothing but naked figures to represent; nay, his subjects generally consist of figures clothed from head to foot.

To drape a figure well, it is necessary that the folds be large and few in number; because large folds produce great masses of light and shadow, while small ones multiply the objects of view and distract the attention. But if the character of the drapery or kind of stuff require small folds, they should at least be distributed in groups, in such a manner that a great number of small folds shall be sub-

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ſubordinate to an equal maſs formed by a principal fold.

The colour of the drapery alſo contributes to the harmony of the whole, and produces effects which the claro-obſcuro cannot do alone. At the ſame time, the principles of the claro-obſcuro ſhould preſide over, or at leaſt regulate, the art of drapery. If the folds of the ſtuff which cover the members expoſed to the light are too ſtrongly ſhaded, they will appear to enter into the members, and out them. Drapery contributes to the life, to the character, to the expreſſion of the figures, provided all the movements of the folds announce the lively or more tranquil movement of thoſe figures. The drapery muſt alſo agree with the age and character of the figures: And if nature in any inſtance is found to contradict thoſe principles, it is becauſe they relate to the ideal of the art; and it is this ideal which carries it to the greateſt perfection.

Great attention is alſo neceſſary to the ſituation in which the figures are placed, and the actions about which they are employed. If they are in the act of aſcending, a column of air weighs down the drapery; if, on the contrary, they are deſcending, the drapery is ſupported and ſpread out. The folds placed on every member, and the general play of the drapery, ſhould indicate whether the figure is in action or about to be ſo; whether action be beginning or ending; and whether it be ſlow, or quick, or violent. All this is agreeable to nature; but it alſo partakes of the ideal, ſince nature never can be copied in ſuch fluctuating ſituations. The practice of the Roman ſchools, firſt to draw after nature, and then to paint after the drawing, cannot be adopted by colouriſts; becauſe nature, according to the kind of the ſtuffs, produces tones and lights which give more perfection and truth to the work. Raphael, who followed this practice, enjoys the firſt reputation for giving play to his drapery, and diſpoſing the folds in the beſt order. In this part he has even attained the height of ideal beauty. He is the greateſt painter of drapery, as the Venetians are the greateſt in painting ſtuffs. See farther remarks on this ſubject under the article Drawing, *Sect.* XIII.

Sect. VII. *Of* Landscape *and* Architecture.

When our young painter has made a ſufficient progreſs in thoſe principal branches of his art, the deſigning, perſpective, colouring, and drapery of human figures, he ſhould turn his thoughts to landſcape and architecture.

The moſt eminent landſcape-painters are Pouſſin, Lorenese, and Titian.

Paul Veronese is in architecture what Titian is in landſcape. To excel in landſcape, we muſt, above all things ſtudy nature. To excel in architecture, we muſt chiefly regard the fineſt works of art; ſuch as the fronts of ancient edifices, and the fabrics of thoſe moderns who have beſt ſtudied and beſt copied antiquity. After Brunelleſchi and Alberti, who were the firſt revivers of architecture, came Bramante, Julius Romano, Sanſovino, Sanmicheli, and laſtly Palladio, whoſe works the young painter ſhould above all diligently ſtudy and imprint deeply on his mind. Nor is Vignola to be forgot.

The ſtudy of architecture cannot fail, of being very uſeful to the young painter, inaſmuch as it will bring him acquainted with the form of the temples, thermæ, baſilics, theatres, and other buildings of the Greeks and Romans. Beſides, from the baſſo-relievos with which it was cuſtomary to adorn theſe buildings, he may gather, with equal delight and profit, the nature of their ſacrifices, arms, military enſigns, and dreſſes. The ſtudy of landſcape, too, will render familiar to him the form of the various plants peculiar to each ſoil and climate, and ſuch other things as ſerve to characteriſe the different regions of the earth. Thus by degrees he will learn what we call costume, one of the chief requiſites in a painter; ſince by means of it he may expreſs with great preciſion the time and place in which his ſcenes are laid. See farther Remarks on Landſcape and Architecture, under Drawing, *Sect.* XIV.

Sect. VIII. *Of the* Expressions *of the* Passions.

That language which above all others a painter ſhould carefully endeavour to learn, and from nature herſelf, is the language of the paſſions. Without it the fineſt works muſt appear lifeleſs and inanimate. It is in this branch that painting truly ſoars, and in a manner riſes ſuperior to itſelf.

Many have written, and amongſt the reſt the famous Le Brun, on the various changes that, according to the various paſſions, happen in the muſcles of the face, which are, as it were, the mirror of the ſoul. From Le Brun's work we have already given a ſufficient extract, under the article Drawing, Sect. X. and XI; along with ſome remarks of M. de Piles on the ſubject. See alſo Plates CXIX and CXX. It may be of ſervice to a young painter to read theſe and ſuch other remarks; but it will be of infinitely more ſervice to ſtudy the effects of the paſſions on the human features in nature itſelf, from which they have been borrowed, and which exhibits them in that lively manner, which neither tongue nor pen can expreſs. The artiſt may reap great benefit from ſtudying ſuch fine ancient heads as thoſe of Mithridates, Seneça, Alexander dying, Cleopotra, Niobe, &c. and above all, from attentively obſerving ſuch movements of nature as we daily meet with in the world. But let him chiefly conſult his looking-glaſs, and ſtudy after his own face, what, in certain expreſſions, are the muſcles, the lineaments, the tints, and the accidental circumſtances, which characteriſe the ſituation of the ſoul.

Sect. IX. *Of* Invention.

Invention is the finding out probable things, not only ſuch as are adapted to the ſubject in hand, but ſuch, beſides, as by their ſublimity and beauty are moſt capable of exciting ſuitable ſentiments in the ſpectator, and of making him, when well executed, fancy that it is the ſubject itſelf in its greateſt perfection, and not a mere repreſentation of it, that he has before him. We do not ſay true things, but probable things; becauſe probability

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bility or verifimilitude is, in fact, the truth of thoſe arts which have the fancy for their object. It is, indeed, the buſineſs and duty of both naturaliſts and hiſtorians to draw objects as they find them, and repreſent them with all thoſe imperfections and blemiſhes, to which, as individuals, they are ſubject. But an ideal painter, and ſuch is the painter of real genius, reſembles the poet: inſtead of copying, he imitates; that is, he works with his fancy, and repreſents objects endued with all that perfection which belongs to the ſpecies, and may be conceived in the archetype.

The mythology of the ancient Greeks and Romans afforded an extenſive field for invention to the ancient painters; nor have there been wanting able inventors in painting among the moderns.

When a painter takes a ſubject in hand, whether hiſtorical, or fabulous, he ſhould carefully peruſe the books which treat of it, imprint well on his mind all the circumſtances that attend it, the perſons concerned in it, and the paſſions with which they muſt have been ſeverally animated; not omitting the particulars of time and place. His next buſineſs is to create it, as it were, anew, obſerving the rules already laid down for that purpoſe: From what is true, chooſing that which is moſt ſtriking; and clothing his ſubject with ſuch acceſſory circumſtances and actions, as may render it moſt conſpicuous, pathetic, and noble, and beſt diſplay the powers of the inventive faculty. But, in doing this, great diſcretion is requiſite; for, let his imagination grow ever ſo warm, his hand is never to execute any thing that is not fully approved by his judgment. Nothing low or vulgar ſhould appear in a lofty and noble ſubject; a fault, of which ſome of the greateſt maſters, even Lampieri and Pouſſin, have been now and then guilty.

The action muſt be one, the place one, the time one. The epiſodes introduced in the drama of a picture, ſhould be not only beautiful in themſelves, but indiſpenſibly requiſite. Every part ſhould agree with, and have a relation to, the whole. Unity ſhould reign even in variety; for in this beauty conſiſts. This is a fundamental maxim in all the arts whoſe object it is to imitate the works of nature.

SECT. X. *Of* DISPOSITION.

DISPOSITION may be conſidered as a branch of invention, conſiſting in the proper ſtationing of what the inventive faculty has imagined, ſo as to expreſs the ſubject in the moſt lively manner. The chief merit of diſpoſition conſiſts in that diſorder, which, wearing the appearance of mere chance, is in fact the moſt ſtudied effect of art. A painter, therefore, is equally to avoid the dryneſs of thoſe ancients who always planted their figures like ſo many couples in a proceſſion, and the affectation of thoſe moderns who jumble them together as if they met merely to fight and ſquabble.

Let the inferior figures of a piece be placed as they will, the principal figure ſhould ſtrike the eye moſt, and ſtand out, as it were, from among the reſt. This may be effected various ways, as by placing it on the foremoſt lines, or in ſome other conſpicuous part of the piece; by exhibiting it, in a manner, by itſelf; by making the principal light fall upon it; by giving it the moſt reſplendent drapery, or, indeed, by all theſe methods together.

According to Leon Baptiſt Alberti, painters ſhould follow the example of comic writers, who compoſe their fable of as few perſons as poſſible. For a crowded picture is apt to give as much pain to the ſpectator, as a crowded road to the traveller.

Some ſubjects, it muſt be granted, require a number of figures. On theſe occaſions, it depends entirely on the ſkill of the painter to diſpoſe of them in ſuch a manner, that the principal ones may always make the principal appearance; and contrive matters ſo that the piece be not overcrowded, or want convenient reſts and pauſes. He muſt, in a word, take care that his piece be full, but not charged.

The reaſon for breaking the compoſition into ſeveral groups is, that the eye, paſſing freely from one object to another, may the better comprehend the whole. But theſe groups are to be ſo artfully put together, as to form rich cluſters, give the whole compoſition an air of grandeur, and afford the ſpectator an opportunity of diſcerning the piece at a diſtance, by taking the whole in, as it were, at a ſingle glance. Theſe effects are greatly promoted by a due regard to the nature of colours, ſo as not to place together thoſe which are apt to pain by their oppoſition, or diſtract by their variety. They ſhould be ſo judiciouſly diſpoſed as to temper and qualify each other.

A proper uſe of the chiaro-ſcuro is likewiſe of great ſervice on this occaſion. The groups are eaſily parted, and the whole picture acquires a grand effect, by introducing ſome ſtrong falls of ſhade, and, above all, one principal beam of light.

In like manner, a painter, by the help of perſpective, eſpecially that called *aerial*, the oppoſition of local colours, and other contrivances which he may hit upon by ſtudying nature, and thoſe who have beſt ſtudied her before him, will be able not only to part his groups, but make them appear at different diſtances, ſo as to leave ſufficient paſſages between them.

But the greateſt caution is to be uſed in the purſuit of the methods here laid down; eſpecially in the management of the chiaro-ſcuro, that the effects attributed to light and ſhade, and to their various concomitants, may not run counter to truth and experience. This is a capital point. For this purpoſe, a painter would do well to make, in little figures, as Tintoret and Pouſſin uſed to do, a model of the ſubject that he intends to repreſent, and then illuminate it by lamp or candle light. Thus he may know with certainty, if the chiaro-ſcuro, which he has formed in his mind, does not claſh with the reaſon of things. By varying the height and direction of his light, he may eaſily diſcover ſuch accidental effects as are moſt likely to recommend his performance, and ſo eſtabliſh a proper ſyſtem for the illuminating it.

In the next place, to turn a group elegantly, the beſt pattern is that of a bunch of grapes adopted by Titian. As, of the many grains that compoſe a bunch of grapes, ſome are ſtruck directly by the light, and thoſe oppoſite to them are in the ſhade, whilſt the intermediate ones partake of both light and ſhade in a greater or leſs degree; ſo, according to Titian, the figures of a group ſhould be ſo diſpoſed, that, by the union of the chiaro-ſcuro, ſeveral

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ſeveral things may appear, as it were, but one thing. And in fact it is only from his having purſued this method, that we can account for the very grand effect of his pieces this way, in which it is impoſſible to ſtudy him too much.

As to foreſhortened figures, too much affectation in uſing or avoiding them is equally blameable. The attitudes had better be compoſed than otherwiſe. It very ſeldom happens, that there is any occaſion for making them ſo impetuous as to be in danger of loſing their equilibrium; a thing too much practiſed by ſome painters.

Let the whole, in a word, and all the different parts of the diſpoſition, poſſeſs probability, grace, coſtume, and the particular character of what is to be repreſented. Let nothing look like uniformity of manner, which does not appear leſs in the compoſition than it does in colouring, drapery, and deſign; and is, as it were, that kind of accent, by which painters may be as readily diſtinguiſhed, as foreigners are by pronouncing in the ſame manner all the different languages they happen to be acquainted with.

Sect. XI. *Of the* Costume.

The costume in painting, correſponds with the unities of time, place, and action, in tragedy and in epic poetry. It is chiefly confined to hiſtory-painting; and regards the cuſtoms of different periods, the manner, the dreſs, and colours of different nations. Great exactneſs in the coſtume is ſcarcely practicable; but too ſenſible a departure from it denotes unpardonable negligence. It frequently happens, that a piece compoſed of pictureſque figures, derives conſiderable advantage from certain liberties, which are calculated to pleaſe both the artiſt and the ſpectator; for the judges of painting are not habitually occupied with the details of ancient and modern hiſtory, or profoundly verſed in all the circumſtances which make a departure from the coſtume conſpicuous. On the other hand, if they were ſo ignorant as not to underſtand, or ſo indifferent as not to regard thoſe circumſtances, this branch of the art would be altogether arbitrary. The road of the painter is between theſe two extremes, not to deſpiſe beauty on the one hand, nor probability on the other. But in purſuing this part of the art, it is in vain to ſeek for perfect models in ancient or modern painting.

A painter, the better to attain the end of his art, which is deception, ought carefully to avoid mixing the antique with the modern, the domeſtic with the foreign; things, in ſhort, repugnant to each other, and therefore incapable of gaining credit. A ſpectator will never be brought to conſider himſelf as actually preſent at the ſcene, the repreſentation of which he has before him, unleſs the circumſtances which enter it perfectly agree among themſelves, and the field of action, if we may uſe the expreſſion, in no ſhape belies the action itſelf. For inſtance, the circumſtances, or, acceſſories, in a *Finding of Moſes*, are not ſurely to repreſent the borders of a canal planted with rows of poppies, and covered with country houſes in the European taſte; but the banks of a great river, ſhaded with cluſtres of palm-trees, with a Sphinx or an Anubis in the adjacent fields, and here and there, in the back ground, a towering pyramid. And indeed the painter, before he takes either canvas or paper in hand, ſhould, on the wings of fancy, tranſport himſelf to Egypt, to Thebes, or to Rome; and ſummoning to his imagination the phyſiognomy, the dreſs, the plants, the buildings, ſuitable to his ſubject, with the particular ſpot where he has choſen to lay his ſcene, ſo manage his pencil, as, by the magic of it, to make the enraptured ſpectators fancy themſelves there along with him.

Sect. XII. Practical Observations.

Having thus laid down the principles of the art, and given the ſtudent ſome directions as to his ſtudies, we conclude this part with a few obſervations relative to practice.

1. The young painter muſt be careful not to be led aſtray by the ambition of compoſing eaſily, or attaining to what is called a *maſterly handling* of the chalk or pencil; a pernicious attempt, by which ſtudents are excluded from all power of advancing in real excellence. To this attempt, however, young men have not only the frivolous ambition of being thought maſterly inciting them on the one hand, but alſo their natural ſloth tempting them on the other. They are terrified at the proſpect before them, and of the toil required to obtain exactneſs; whilſt the lives of the moſt eminent painters furniſh us with examples of the moſt unceaſing induſtry. When they conceived a ſubject, they firſt made a variety of ſketches; then a finiſhed drawing of the whole; after that, a more correct drawing of every ſeparate part, heads, hands, feet, and pieces of drapery; they then painted the picture, and, after all, retouched it from the life. The pictures, thus wrought with ſuch care, now appear like the effects of enchantment; or as if ſome mighty genius had ſtruck them off at a blow.

But a ſtudent muſt apply his ſtrength to that part of the art where the real difficulties lie; to that part which diſtinguiſhes it as a liberal art, and not, by miſtaken induſtry, loſe his time in that which is merely ornamental. The ſtudents, inſtead of vying with each other who ſhall have the readieſt hand, ſhould be taught to labour who ſhall have the pureſt and moſt correct outline; inſtead of ſtriving who ſhall produce the brighteſt tint, or endeavouring to give the gloſs of ſtuffs ſo as to make them appear real, let their ambition be directed to contend, who ſhall diſpoſe his drapery in the moſt graceful folds, and give the greateſt dignity to the human form. He who endeavours to copy accurately the figure before him, not only acquires a habit of exactneſs and preciſion, but is continually advancing in his knowledge of the human figure; and though he ſeems to ſuperficial obſervers to make a ſlower progreſs, he will be found at laſt capable of adding (without running into capricious wildneſs) that grace and beauty which is neceſſary to be given to his more finiſhed works, and which cannot be got by the moderns, as it was not acquired by the ancients, but by an attentive and well-directed ſtudy of the human form.

2. It is of great importance that the drawings on

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on which the young artiſt firſt exerciſes his talents be of the moſt excellent kind. Let the profiles, the hands, and the feet given him to copy, be of the beſt maſters, ſo as to bring his eye and his hand early acquainted with the moſt elegant forms and the moſt beautiful proportions. A painter who has early acquired a fine taſte, finds it an eaſy matter to give dignity to the meaneſt features, while the works of a Praxiteles or a Glycon are ſeen to ſuffer in the hands of another. A veſſel will ever retain the ſcent which it has firſt contracted.

3. He ſhould alſo copy ſome fine heads from the Greek and Roman medals; not ſo much for the reaſon juſt laid down, as to make him acquainted, if we may uſe the expreſſion, with thoſe perſonages which in time he may have occaſion to introduce into his pieces, and above all, to improve him early in the art of copying from relief. Hence he will learn the rationale of light and ſhade, and the nature of that chiaro-ſcuro by which, properly ſpeaking, the various forms of things are diſtinguiſhed.

There is no danger of ſtudying too much the works of the greateſt maſters, either in painting or ſculpture; but how they may be ſtudied to advantage is an inquiry of great importance. "Some (ſays Sir Joshua Reynolds) who have never raiſed their minds to the conſideration of the real dignity of the art, and who rate the works of an artiſt in proportion as they excel or are defective in the mechanical parts, look on theory as ſomething that may enable them to talk, but not to paint better; and, confining themſelves entirely to mechanical practice, very aſſiduouſly toil in the drudgery of copying, and think they make a rapid progreſs, while they faithfully exhibit the minuteſt part of a favourite picture. This appears to me a very tedious and I think, a very erroneous method of proceeding. Of every large compoſition, even of thoſe which are moſt admired, a great part may be truly ſaid to be common place. This, though it takes much time in copying, conduces little to improvement. I conſider general copying as a deluſive kind of induſtry; the ſtudent ſatisfies himſelf with the appearance of doing ſomething; he falls into the dangerous habit of imitating without ſelecting, and of labouring without any determinate object: as it requires no effort of the mind, he ſleeps over his work; and thoſe powers of invention and compoſition which ought particularly to be called out and put in action, lie torpid, and loſe their energy for want of exerciſe.

"However, as the practice of copying is not entirely to be excluded, ſince the mechanical practice of painting is learned in ſome meaſure by it, let thoſe choice parts only be ſelected which have recommended the work to notice. If its excellence conſiſts in its general effect, it would be proper to make ſlight ſketches of the machinery and general management of the picture. Thoſe ſketches ſhould be kept always by you, for the regulation of your ſtyle. Inſtead of copying the touches of thoſe great maſters, copy only their conceptions. Inſtead of treading in their footſteps, endeavour only to keep the ſame road. Labour to invent on their general principles and way of thinking. Poſſeſs yourſelf with their ſpirit. Conſider with yourſelf, how a Michael Angelo or a Raphael would have treated this ſubject, and work yourſelf into a belief that your picture is to be ſeen and criticiſed by them when completed. Even an attempt of this kind will rouſe your powers."

The ſame great maſter recommends to ſtudents to keep their minds fixed on the higheſt excellencies. "If you compaſs them, and compaſs nothing more, you are ſtill in the firſt claſs. We may regret the innumerable beauties which you may want; you may be very imperfect; but ſtill you are an imperfect perſon of the higheſt order.

"I inculcate as frequently as I can, your forming yourſelves upon great principles and great models. Your time will be much miſpent in every other purſuit. Small excellencies ſhould be viewed, not ſtudied; they ought to be viewed, becauſe nothing ought to eſcape a painter's obſervation, but for no other reaſon.

"There is another caution which I wiſh to give you. Be as ſelect in thoſe whom you endeavour to pleaſe, as in thoſe whom you endeavour to imitate. Without the love of fame, you can never do any thing excellent; but by an exceſſive and undiſtinguiſhing thirſt after it, you will come to have vulgar views; you will degrade your ſtyle; and your taſte will be entirely corrupted. It is certain that the loweſt ſtyle will be the moſt popular, as it falls within the compaſs of ignorance itſelf, and the vulgar will always be pleaſed with what is natural, in the confined and miſunderſtood ſenſe of the word."

Genius, Sir Joſhua conſiders as an improveable talent, never to be deſtroyed by the moſt exceſſive, if well directed, application, and diſplaying the elegancies of the art in proportion to the number of ideas which have been carefully collected and digeſted in the mind. He cautions painters, therefore, in every ſtage of their progreſs, to beware of that falſe opinion, but too prevalent among artiſts, of the imaginary power of native genius, and its ſufficiency in great works.

This opinion, according to the temper of mind it meets with, almoſt always produces either a vain confidence or a ſluggiſh deſpair, both equally fatal to all proficiency. "Study, therefore, the great works of the great maſters for ever. Study, as nearly as you can, in the order, in the manner, on the principles on which they ſtudied. Study nature attentively, but always with thoſe maſters in your company; conſider them as models which you are to imitate, and at the ſame time, as rivals whom you are to combat."

PART II.

Of the DIFFERENT CLASSES of PAINTING.

Sect. I. General Enumeration.

As all the ſubjects in nature are ſuſceptible of imitation by the pencil, the maſters of this art have applied themſelves to different ſubjects, each one as his talents, his taſte, or inclination may have led him.—From whence have ariſen the following claſſes:

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I. History painting: which repreſents the principal events in hiſtory, ſacred and profane, real or fabulous; and to this claſs belongs *allegorical expreſſion*. Theſe are the moſt ſublime productions of the art; and in which Raphael, Guido, Rubens, Le Brun, &c. have excelled.

II. Rural history; or the repreſentation of a country life, of villages and hamlets, and their inhabitants. This is an inferior claſs; and in which Teniers, Breughel, Watteau, &c. have great reputation, by rendering it at once pleaſing and graceful.

III. Portrait-painting; which is an admirable branch of this art, and has engaged the attention of the greateſt maſters in all ages, as Apelles, Guido, Vandyke, Rembrandt, Regauds, Peſne, Kneller, La Tour, &c.

IV. Grotesque histories; as the nocturnal meetings of witches; ſorceries and incantations; the operations of mountebanks, &c. a ſort of painting in which the younger Breughel, Teniers, and others, have exerciſed their talents with ſucceſs.

V. Battle-pieces; by which Huchtemberg, Wouwerman, &c. have rendered themſelves famous.

VI. Landscapes; a charming ſpecies of painting, that has been treated by maſters of the greateſt genius in every nation.

VII. Landscapes diversified with waters, as rivers, lakes, cataracts, &c.; which require a peculiar talent, to expreſs the water ſometimes ſmooth and tranſparent, and at others foaming and ruſhing furiouſly along.

VIII. Sea-pieces: in which are repreſented the ocean, harbours, and great rivers; and the veſſels, boats, barges, &c. with which they are covered; ſometimes in a calm, ſometimes with a freſh breeze, and at others in a ſtorm. In this claſs Backhuyſen, Vandervelde, Blome, and many others, have acquired great reputation.

IX. Night-pieces; which repreſent all ſorts of objects, either as illuminated by torches, by the flames of a conflagration, or by the light of the moon. Schalck, Vanderneer, Vanderpool, &c. have here excelled.

X. Living Animals: A more difficult branch of painting than is commonly imagined; and in which Roſa, Carré, Vandervelde, and many others, have ſucceeded marvelouſly well.

XI. Birds *of all kinds*; a very laborious claſs, and which requires extreme patience minutely to expreſs the infinite variety and delicacy of their plumage.

XII. Culinary pieces; which repreſent all ſorts of proviſions, and animals without life, &c; a claſs much inferior to the reſt, in which nature never appears to advantage, and which requires only a ſervile imitation of objects that are but little pleaſing. The painting of fiſhes is referred to this claſs.

XIII. Fruit-pieces, of every kind, imitated from nature.

XIV. Flower-pieces; a charming claſs of painting, where Art in the hands of Huyzum, P. Segerts, Merian, &c. becomes the rival of Nature. *Plants* and *inſects* are uſually referred to the painters of flowers, who with them ornament their works.

XV. Pieces of Architecture; a kind of painting in which the Italians excel all others. Under this claſs may be comprehended the repreſentations of ruins, ſea-ports, ſtreets, and public places; ſuch as are ſeen in the works of Canaletti, and other able maſters.

XVI. Instruments of music, *pieces of furniture*, and other inanimate objects; a trifling ſpecies, and in which able painters only accidentally employ their talents.

XVII. Imitations of bas-reliefs; a very pleaſing kind of painting, and which may be carried by an able hand to a high degree of excellence.

XVIII. Hunting pieces: theſe alſo require a peculiar talent, as they unite the painting of men, horſes, dogs, and game, to that of landſcapes.

It will not be expected that we ſhould here give the rules that the painter is to obſerve in handing each particular ſubject. What has been ſaid on hiſtorical painting (*Part* I. *Sect.* IX. and X.) may throw ſome light on the reſt, and the particular rules muſt be learned from the ſtudy of the art itſelf. Good maſters, academies of reputation, and a rational practice, are the ſources whence the young painter muſt derive the detail of his art. We ſhall however inſert ſome rules and obſervations relative to *Landſcape* and *Portrait*; theſe, with *Hiſtory painting*, formed the principal branches of the art.

Sect. II. *Of* Landscapes.

Landscape painting includes every object that the country preſents; and is diſtinguiſhed into the *heroic*, and the *paſtoral* or *rural*; of which indeed all other ſtyles are but mixtures.

The heroic style is a compoſition of objects, which in their kinds draw, both from art and nature, every thing that is great and extraordinary in either. The ſituations are perfectly agreeable and ſurpriſing. The only buildings are temples, pyramids, ancient places of burial, altars conſecrated to the divinities, pleaſure-houſes of regular architecture; and if nature appear not there as we every day caſually ſee her, ſhe is at leaſt repreſented as we think ſhe ought to be. This ſtyle is an agreeable illuſion, and a ſort of enchantment, when handled by a man of fine genius and a good underſtanding, as Pouſſin was, who had ſo happily expreſſed it. But if, in the courſe of this ſtyle, the painter has not talent enough to maintain the ſublime, he is often in danger of falling into the childiſh manner.

The rural style is a repreſentation of countries, rather abandoned to the caprice of nature, than cultivated: we there ſee nature ſimple, without ornament, and without artifice; but with all thoſe graces wherewith ſhe adorns herſelf much more when left to herſelf than when conſtrained by art. In this ſtyle, ſituations bear all ſorts of varieties: ſometimes they are very extenſive and open, to contain the flocks of the ſhepherds; at others very wild, for the retreat of ſolitary perſons, and a covert for wild beaſts.

There are numberleſs pieces wherein both theſe ſtyles happily meet; and which has the aſcendant, will appear from their reſpective properties. The chief parts of landſcapes are, their *ſites* or *openings*, *accidents*, *ſkies* and *clouds*, *offskips* and *mountains*, *verdure*

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verdure or *turfing*, *rocks*, *grounds* or *lands*, *terraces*, *fabrics*, *waters*, *fore grounds*, *plants*, *figures*, and *trees*.

The word *ſite*, or *ſituation*, ſignifies the *view*, *proſpect*, or *opening* of a country. Situations ought to be well put together; and diſengaged in their make, that the conjunction of grounds may not ſeem to be obſtructed though we ſhould ſee but a part of them.

1. SITUATIONS are various, and repreſented according to the plan of the painter, as either open or cloſe, mountainous or watery, tilled and inhabited, or wild and lonely; or, in fine, variegated by a prudent mixture of ſome of theſe. But if the painter be obliged to imitate nature in a flat and regular country, he muſt make it agreeable by a good diſpoſition of the *claro-obſcuro*, and ſuch pleaſing colouring as may make one ſoil unite with another. Extraordinary ſituations are very pleaſing, and cheer the imagination by their novelty and beauty, even when the local colouring is but moderately performed: becauſe, at worſt, ſuch pictures are only looked on as unfiniſhed, and wanting to be completed by ſome ſkilful hand in colouring; whereas common ſituations and objects require good colouring and abſolute finiſhing, in order to pleaſe. It was only by theſe properties that Claud Lorrain has made amends for his inſipid choice in moſt of his ſituations. But in whatever manner that part be executed, one of the beſt ways to make it valuable, and even to multiply and vary it without altering its form, is properly to imagine ſome ingenious accident in it.

2. An ACCIDENT in painting is an obſtruction of the ſun's light by the interpoſition of clouds, in ſuch manner, that ſome parts of the earth ſhall be in light and others in ſhade, which, according to the motion of the clouds, ſucceed each other, and produce ſuch wonderful effects and changes of the *claro-obſcuro*, as ſeem to create ſo many new ſituations.

3. The SKY, in painter's language, is the ethereal part over our heads; but more particularly the air in which we breathe, and that where CLOUDS and ſtorms are engendered. Its colour is blue, growing clearer as it approaches the earth, becauſe of the interpoſition of vapours ariſing between the eye and the horizon; which, being penetrated by the light, communicates it to objects in a greater or leſſer degree, as they are more or leſs remote. But this light, being either yellow or reddiſh, at ſunſet theſe objects partake not only of the light, but of the colour: thus the yellow light mixing with the blue colour of the ſky, alters it, and gives it a tint more or leſs greeniſh, as the yellowneſs of the light is more or leſs deep.

This obſervation is general and infallible; but there is an infinity of particular ones, which the painter muſt make upon the natural, with his pencil in his hand, when occaſion offers; for there are very fine and ſingular effects appearing in the ſky, which it is difficult to deſcribe or account for by phyſical or optical reaſons; for the various colours and ſurpriſing appearances of the ſky and clouds at ſunſet ſeem to have no relation to the rainbow, a phenomenon for which the philoſopher can give ſolid reaſons. See OPTICS, *Index*.

The property of clouds is to be thin and airy, both in ſhape and colour: their ſhapes, though infinite, muſt be ſtudied after nature, at ſuch times as they appear fine. To make them look thin, we ought to make their grounds unite thinly with them, eſpecially near their extremities, as if they were tranſparent: And if we would have them thick, their reflections muſt be ſo managed, as, without deſtroying their thinneſs, they may ſeem to wind and unite, if neceſſary, with the clouds that are next to them. Little clouds ſeldom have a good effect, unleſs when, being near each other, they ſeem altogether to make but one object. In ſhort, the character of the ſky is to be luminous; and, as it is a ſource of light, every thing that is upon the earth muſt yield to it in brightneſs: If, however, there is any thing that comes near it in light, it muſt be waters, and poliſhed bodies which are ſuſceptible of luminous reflections.

But while the painter makes the ſky luminous, he muſt not repreſent it always ſhining throughout. On the contrary, he muſt contrive his light ſo, that the greateſt part of it may fall only upon one place: and to make it more apparent, he muſt take as much care as poſſible to put it in oppoſition to ſome terreſtrial object, that may render it more lively by its dark colour; as a tree, tower, or ſome other building that is ſomewhat high. This principal light may alſo be heightened, by a certain diſpoſition of clouds having a ſuppoſed light, or a light ingeniouſly incloſed between clouds, whoſe ſweet obſcurity ſpreads itſelf by little and little on all hands.

4. OFFSKIPS have a near affinity with the ſky; it is the ſky which determines either the force or faintneſs of them. They are darkeſt when the ſky is moſt loaded, and brighteſt when it is moſt clear. They ſometimes intermix their ſhapes and lights; and there are times and countries where the clouds paſs between the mountains, whoſe tops riſe and appear above them. Mountains that are high, and covered with ſnow, are very proper to produce extraordinary effects in the offskip, which are advantageous to the painter, and pleaſing to the ſpectator. The diſpoſition of offskips its arbitrary; let them only agree with the whole together of the picture, and the nature of the country we would repreſent. They are uſually blue, becauſe of the interpoſition of air between them and the eye: but they loſe this colour by degrees, as they come nearer the eye, and ſo take that which is natural to the objects.

In diſtancing MOUNTAINS, we muſt obſerve to join them inſenſibly by the roundings off, which the reflections make probable; and avoid a certain edgineſs in their extremities, which makes them appear in ſlices, as if cut with ſciſſars, and ſtuck upon the cloth. The air at the feet of mountains, being charged with vapours, is more ſuſceptible of light than at their tops. In this caſe, we ſuppoſe the main light to be ſet reaſonably high, and to enlighten the mountains equally, or that the clouds deprive them of the light of the ſun. But if we ſuppoſe the main light to be very low, and to ſtrike the mountains, then their tops will be ſtrongly enlightened, as well as every thing elſe in the ſame degree of light. Though the forms of things diminiſh in bigneſs, and colours loſe their ſtrength, in proportion as they recede from the

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first plan of the picture, to the moſt remote offskip, as we obſerve in nature and common practice; yet this does not exclude the uſe of the accidents. Theſe contribute greatly to the wonderful in landſcape, when they are properly introduced, and when the artiſt has a juſt idea of their good effects.

5. By VERDURE or TURFING is meant the greenneſs with which the herbs colour the ground: This is done ſeveral ways; and the diverſity proceeds, not only from the nature of plants, which, for the moſt part, have their particular verdures, but alſo from the change of ſeaſons, and the colour of the earth, when the herbs are but thin ſown. By this variety, a painter may chooſe or unite, in the ſame tract of land, ſeveral ſorts of greens, intermixed and blended together, which are often of great ſervice to thoſe who know how to uſe them; becauſe this diverſity of greens, as it is often found in nature, gives a character of truth to thoſe parts where it is properly uſed. There is a wonderful example of this part of landſcape, in the view of Mechlin, by Rubens.

6. Though ROCKS have all ſorts of ſhapes, and participate of all colours, yet there are, in their diverſity, certain characters which cannot be well expreſſed without having recourſe to nature. Some are in banks, and ſet off with beds of ſhrubs; others in huge blocks, either projecting or falling back; others conſiſt of large broken parts, contiguous to each other; and others, in ſhort, of an enormous ſize, all in one ſtone, either naturally, as free-ſtone, or elſe through the injuries of time, which in the courſe of many ages has worn away their marks of ſeparation. But whatever their form be, they are uſually ſet out with clefts, breaks, hollows, buſhes, moſs, and the ſtains of time; and theſe particulars, well managed, create a certain idea of truth. Rocks are of themſelves gloomy, and only proper for ſolitudes: but where accompanied with buſhes, they inſpire a freſh air; and, when they have waters, either proceeding from, or waſhing them, they give an infinite pleaſure.

7. A GROUND or LAND, in the painter's ſtyle, is a certain diſtinct piece of land, which is neither too woody nor hilly. Grounds contribute, more than any thing to the gradation and diſtancing of landſcape; becauſe they follow one another, either in ſhape, or in the *claro-obſcuro*, or in their variety of colouring, or by ſome inſenſible conjunction of one with another. Multiplicity of grounds, though it be often contrary to grand manner, does not deſtroy it; for, beſides the extent of country which it exhibits, it is ſuſceptible of the accidents we have mentioned, and which, with good management, have a fine effect. There is one nicety to be obſerved in grounds, *viz.* that in order to characterize them well, care muſt be taken, that the trees in them have a different verdure and different colours from thoſe grounds; though this difference muſt not be too apparent.

8. A TERRACE, in painting, is a piece of ground, either quite naked or having very little herbage, like great roads and places often frequented. They are of uſe chiefly in the fore grounds of a picture, where they ought to be very ſpacious and open, and accompanied with ſome accidental verdure, and ſome ſtones, which, if placed with judgment, give a terrace a greater air of probability.

9. Painters mean by BUILDINGS any ſtructures they generally repreſent, but chiefly ſuch as are of a regular architecture, and are moſt conſpicuous. Building is not ſo proper a name for the houſes of country people, or the cottages of ſhepherds, which are introduced into the *rural* taſte, as for regular and ſhowy edifices, which are always brought into the *heroic*. Buildings in general are a great ornament in landſcapes, even when they are Gothic, or appear partly inhabited and partly ruinous: they raiſe the imagination by the uſe they are thought to be deſigned for; as appears from ancient towers, which give a venerable appearance to a landſcape.

10. Much of the ſpirit of landſcape is owing to the WATERS which are introduced in it. They appear ſometimes impetuous, as when a ſtorm makes them overflow their banks; at other times rebounding, as by the fall of a rock; at other times, through unuſual preſſure, guſhing out and dividing into numberleſs ſtreams, whoſe motion and murmuring agreeably deceive both the eye and ear; at other times calm and purling in a ſandy bed; at other times ſo ſtill and ſtanding, as to become a faithful looking-glaſs, which doubles all the objects that are oppoſite to it; and in this ſtate they have more life than in the moſt violent agitation. Conſult BOURDON's works, or his prints, on this ſubject: he has treated of waters with the greateſt propriety. Waters are not proper for every ſituation; but, to expreſs them well, the artiſt ought to be maſter of the exactneſs of watery reflections; becauſe they only make painted water appear as real: for practice alone, without exactneſs, deſtroys the effect.

11. As it is the part of the FORE GROUND to uſher the eye into the piece, great care muſt be taken that the eye meet with good reception; ſometimes by the opening of a fine terrace, whoſe deſign and workmanſhip may be equally curious; ſometimes by a variety of well diſtinguiſhed plants, and theſe ſometimes flowered; and at other times, by figures in a lively taſte, or other objects, either admirable for their novelty or introduced as by chance. In a word, the artiſt cannot too much ſtudy his fore-ground objects, ſince they attract the eye, impreſs the firſt character of truth, and greatly contribute to make the artifice of a picture ſucceſsful, and to anticipitate our eſteem for the whole work.

12. PLANTS are not always neceſſary in fore grounds, becauſe there are ſeveral ways of making thoſe grounds agreeable. But if we reſolve to draw plants there, we ought to paint them exactly after the life; or at leaſt, among ſuch as we paint practically, there ought to be ſome more finiſhed than the reſt, and whoſe kinds may be diſtinguiſhed by the difference of deſign and colouring, that, by a probable ſuppoſition, they may give the others a character of truth. The ſame may be applied to the branches and barks of trees.

13. In compoſing landſcape, the artiſt may have intended to give it a character agreeable to the ſubject he has choſen, and which his FIGURES ought to repreſent. He may alſo, as often happens, have only thought of his figures, after finiſhing

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ing his landſcape. The truth is, the figures in moſt landſcapes are made rather to accompany than to ſuit them. There are landſcapes ſo diſpoſed and ſituated, as to require only paſſing figures; which ſeveral good maſters, each in his ſtyle, have introduced, as Pouſſin in the heroic, and Fouquier in the rural, with all probability and grace. Reſting figures have been alſo made to appear inwardly active. And theſe two different ways of treating figures act equally, though in a different manner. It is rather inaction that ought to be blamed in figures; for in this condition, which robs them of all connection with the landſcape, they appear to be paſted on. But without reſtricting the painter's liberty in this reſpect, the beſt way to make figures valuable is, to make them ſo to agree with the character of the landſcape, that it may ſeem to have been made purely for the figures. We would not have them either inſipid or indifferent, but to repreſent ſome little ſubject to awaken the ſpectator's attention, or elſe to give the picture a name of diſtinction among the curious.

Great care muſt be taken to proportion the ſize of the figures to the bigneſs of the trees, and other objects of the landſcape. And as they chiefly give life to a landſcape, they muſt be diſperſed as conveniently as poſſible.

14. The beauty of TREES is perhaps one of the greateſt ornaments of landſcape; on account of the variety of their kinds, and their freſhneſs, but chiefly their lightneſs, which makes them ſeem, as being expoſed to the air, to be always in motion. Though diverſity be pleaſing in all the objects of landſcape, it is chiefly in trees that it ſhows its greateſt beauty. Landſcape conſiders both their kinds and their forms. Their kinds require the painter's particular ſtudy, to diſtinguiſh them from each other; for we muſt be able at firſt ſight to diſcover which are oaks, elm, firs, ſycamores, poplars, willows, pines, &c. which, by a ſpecific colour, or touching, are diſtinguiſhable from all other kinds. Beſides the variety which is found in each kind of tree, there is in all trees a general variety. This is obſerved in the different manners in which their branches are diſpoſed, ſome being very vigorous and thick, others more dry and thin; ſome more green, others more red or yellow. But, whatever their nature or manner of branching be, let the handling be lively and thin, to preſerve the ſpirit of their characters. The obſervation of the different barks merits particular attention; for in hard woods, age or accident chaps them, and thereby gives them a ſort of embroidery.

Beginners will find, in practice, that the chief trouble of landſcapes lies in handling trees; and, both in practice and ſpeculation, trees are the moſt difficult part of landſcape, as they are its greateſt ornament. After having ſtudied and copied, with the pen or crayon, firſt the prints, and then the deſigns of Titian and Caracci, the ſtudent ſhould imitate with the pencil thoſe touches which they have moſt diſtinctly ſpecified, if their paintings can be procured: but ſince they are ſcarce, others ſhould be got which have a good character for their touching: as thoſe of Fouquier, who is a moſt excellent model: Paul Brill, Breugel, and Bourdon, are alſo very good; their touching is neat, lively, and thin.—Painters uſually comprife, under the word STUDY, any thing whatever, which they either deſign or paint ſeparately after the life, whether figures, heads, feet, hands, draperies, animals, mountains, trees, plants, flowers, fruits, or whatever may confirm them in the juſt imitation of nature: the drawing of theſe things is what they call *ſtudy*; whether they be for inſtruction in deſign, or to perfect their work.

To improve themſelves in theſe ſtudies painters have taken ſeveral methods. Some have deſigned after nature, in the open fields; and quite finiſhed thoſe parts which they had choſen, but without adding any colour. Others have drawn in oil colours, in a middle tint, on ſtrong paper; and found this method convenient, becauſe, the colours ſinking, they could put colour on colour, though different from each other. For this purpoſe they took with them a flat box, which commodiouſly held their pallet, pencils, oil, and colours. This method which indeed requires ſeveral implements, is doubtleſs the beſt for drawing nature more particularly, and with greater exactneſs, eſpecially if, after the work be dry and varniſhed, the artiſt return to the place where he drew, and retouch the principal things after nature. Others have only drawn the outlines of objects, and ſlightly waſhed them in colours near the life, for the eaſe of their memory. Others have attentively obſerved ſuch parts as they had a mind to retain, and contented themſelves with committing them to memory, which upon occaſion gave them a faithful account of them. Others have made drawings in paſtil and waſh together. Others, with more curioſity and patience, had gone ſeveral times to the places which were to their taſte: the firſt time they only made choice of the parts, and drew them correctly; and the other times were ſpent in obſerving the variety of colouring, and its alterations through change of light.

Now theſe ſeveral methods may each be practiſed as beſt ſuits the ſtudent. Nature, however, at certain times, preſents extraordinary but tranſient beauties, and ſuch as can be of no ſervice to the artiſt who has not as much time as is neceſſary to imitate what he admires. The beſt way to take advantage of ſuch momentary beauties is this: The painter being provided with paper, and a black-lead pencil, let him quickly, but ſlightly, deſign what he ſees extraordinary, and, to remember the colouring, let him mark the principal part with characters, which he may explain at the bottom of the paper. A cloud, for inſtance, may be marked A, another cloud B, a light C, a mountain D, a terrace E, and ſo on. And having repeated theſe letters at the bottom of the paper, let him write againſt each the colour; *blue*, *red*, *violet*, *grey*, &c. or the initials. After this, he muſt go to painting as ſoon as poſſible; otherwiſe moſt of what he has obſerved will ſlip out of his memory. This method is the more uſeful, as it not only prevents our loſing an infinity of ſudden and tranſitory beauties, but alſo helps, by the aforeſaid marks and characters, to perfect the other methods above mentioned.

The propereſt time for theſe ſtudies is autumn; the mildneſs of that ſeaſon, the beauty of the ſky, the richneſs of the earth, and the variety of objects

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jects, are powerful objects, for the painter to improve his genius and perfect his art.

As the general rules of drawing landscapes are laid down under the article Drawing, *Sect.* XIV. we must refer the landscape painter to them. We shall here only make some general remarks on this kind of painting.

I. Landscape supposes the knowledge and practice of the principal rules in *perspective*, to maintain probability. See *Part* I. *Sect.* II. and Perspective.

II. The nigher the leaves of trees are to the earth, the larger they are, and the greener; as being apteſt to receive, in abundance, the ſap which nouriſhes them: and the upper branches begin firſt to take the redneſs or yellowneſs which colours them, in autumn. But it is otherwiſe in plants; for their ſtocks renew all the year round, and their leaves ſucceed one another, at a conſiderable diſtance of time, inſomuch that nature, employed in producing new leaves to adorn the ſtock as it riſes, does by degrees deſert the under ones; which, having firſt performed their office, are the firſt that die: but this effect is more viſible in ſome than in others.

III. The under parts of all leaves are of a brighter green than the upper, and almoſt always incline to the ſilveriſh; and thoſe which are wind-ſhaken are known from others by that colour: but if we view them from beneath, when penetrated by the ſun's rays, they diſcover a fine and lively green.

IV. There are five principal things which give ſpirit to landſcape, viz. figures, animals, waters, wind-ſhaken trees, and thinneſs of penciling; to which add ſmoke, when there is occaſion to introduce it.

V. When one colour predominates throughout a landſcape, as green in ſpring, or red in autumn, the piece will look either as of one colour, or elſe as unfiniſhed. The ingenious painter muſt endeavour to correct the harſh unſightly colouring of winter and ſpring, by means of figures, waters, and buildings; for ſummer and autumn ſubjects are of themſelves capable of great variety.

Sect. III. *Of* Portraiture.

Before we proceed to particulars in this branch of painting, it is neceſſary to attend to ſome general propoſitions.

I. There is not a ſingle perſon in the world who has not a peculiar character both in body and face.

II. Simple and genuine nature is more proper for imitation than nature embelliſhed too artificially.

III. Painters eaſily accuſtom themſelves to their own tints, and the manner of their maſters; and after this habit is rooted, they view nature, not as ſhe really is, but as they are *uſed* to paint her.

IV. It is very difficult to make a picture the figures of which are as big as the life, to have the ſame effect near as at a diſtance.

V. It is proper, before we begin a portrait, to make a ſketch of it.

There are four things neceſſary to make a portrait perfect; viz. *air*, *colouring*, *dreſs*, and *attitude*.

1. The Air reſpects the lines of the face, the head attire, and the ſize. The lines of the face depend upon exactneſs of draught, and agreement of the parts; which altogether muſt repreſent the phyſiognomy of the perſon painted, in ſuch a manner that the picture of his face may ſeem to be alſo that of his mind. It is not exactneſs of deſign in portraits that gives ſpirit and true air, ſo much as the agreement of the parts at the very moment when the diſpoſition and temperament of the ſitter are to be hit off. We ſee ſeveral portraits, which, though correctly deſigned, have a cold, languiſhing, and ſtupid air; whilſt others, leſs correct in deſign, ſtrike us, however, at firſt ſight, with the ſitters reſemblance.

Few painters are careful enough to put the parts well together: Sometimes the mouth is ſmiling, and the eyes are ſad; at other times, the eyes are cheerful, and the cheeks lank; by which means their work has a falſe air, and looks unnatural. Of all the parts of the face, that which contributes moſt to likeneſs is the noſe; it is therefore of great moment to ſet and draw it well. Though the hair of the head ſeems to be part of the dreſs which is capable of various forms without altering the air of the face; yet the head attire which one has been moſt accuſtomed to creates ſuch a likeneſs, that we ſcarce know a familiar acquaintance on his putting on a periwig ſomewhat different from that which he uſed to wear. It is neceſſary therefore, as far as poſſible, to take the air of the head ornament, and make it accompany and ſet off that of the face, if there be no reaſon to the contrary.

As to the ſtature, it contributes ſo much to likeneſs, that we very often know people without ſeeing their face: It is therefore extremely proper to draw the ſize after the ſitter himſelf, and in ſuch an attitude as he uſually appears in. In ſitting, the perſon appears to be of a leſs free make, through the heaving of his ſhoulders: wherefore, to adjuſt his ſize, it is proper to make him ſtand for a ſhort time in the poſture we would give him, and then make our obſervations. All deformities, when the air and temper may be diſcovered without them, ought to be either corrected or omitted in portraits. But in the faces of great men we cannot be too exact, whether the parts be beautiful or not: for portraits of ſuch perſons are to be ſtanding monuments to poſterity; in which caſe, every thing in a picture is precious that is faithful. But after whatever manner the painter acquits himſelf in this point, let him never forget good air nor grace; and that there are, in the natural, advantageous moments for hitting them off.

2. Colouring, in portraiture, is an effuſion of nature, diſcovering the true tempers of perſons; and the temper being eſſential to likeneſs, it ought to be handled as exactly as the deſign. This part is the more valuable, as it is rare and difficult to hit. Many painters have come to a likeneſs by ſtrokes and outlines; but few have ſhown in colours the tempers of perſons. Two points are neceſſary in colouring; exactneſs of tints, and the art of ſetting them off. The former is acquired by practice, in examining and comparing the colours we ſee in life with thoſe by which we would imitate it; and the art of thoſe tints conſiſts in knowing what one colour will produce when ſet by another, and in making good

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good what either diſtance or time may abate on the glow and freſhneſs of the colours. A painter who does nothing more than what he ſees, will never arrive at a perfect imitation; for though his work may ſeem, on the eaſel, to be good to him, it may not appear ſo to others, nor perhaps even to himſelf at a diſtance. A tint which, near, appears diſjoined, and of one colour, may look of another at a diſtance, and be confounded in the maſs it belongs to. If you would have your work, therefore, to produce a good effect in the place where it is to hang, both the colours and lights muſt be a little loaded, but with diſcretion. In this point conſult Titian, Rubens, Vandyke, and Rembrandt's methods; for indeed their art is wonderful.

The tints uſually require three times of obſervation. The firſt is at the perſon's firſt ſitting down, when he has more ſpirit and colour than ordinary; and this is to be noted in the firſt hour of his ſitting. The 2d is when, being compoſed, his look is as uſual; which is to be obſerved in the ſecond hour. And the third is when, through tireſomeneſs by ſitting in one poſture, his colour alters to what wearineſs uſually creates. On which account, it is beſt to keep to the ſitter's uſual tint, a little improved.

3. In DRESS and DRAPERIES, all ſorts of colours do not ſuit all ſorts of perſons. In men's portraits, we need only obſerve great truth and great force: but in women's there muſt alſo be charms; whatever beauty they have muſt appear in a fine light, and their blemiſhes muſt be ſoftened. For this reaſon, a white, lively, and bright tint, ought never to be ſet off by a fine yellow, which would make it look like plaſter; but rather by colours inclining to green, blue, or grey, or ſuch others as, by their oppoſition, may make the tint appear more fleſhy than uſual in fair women. Vandyke often made a fillemot-coloured curtain for his ground; but that colour is ſoft and brown. Brown women, on the other hand, who have yellow enough to ſupport the character of fleſhineſs, may very well have yellowiſh draperies, to bring down the yellow of their tints, and make them look the freſher; and, near very high-coloured and lively carnations, linen does wonders.

In GROUNDS, two things are obſervable; the tone and the colour. The colour is to be conſidered in the ſame manner as thoſe of draperies, with reſpect to the head. The tone muſt be always different from the maſs it ſupports, and of which it is the ground, that the objects coming upon it may not ſeem tranſparent, but ſolid and raiſed. The colour of the hair of the head uſually determines the tone of the ground; and when the former is a bright cheſnut, we are often embaraſſed, unleſs helped by means of a curtain, or ſome accident of the claro-obſcurro, ſuppoſed to be behind, or unleſs the ground is a ſky. Where a ground is neither curtain nor landſcape, but is plain like a wall, it ought to be very much party-coloured, with almoſt imperceptible patches or ſtains; for, beſides its being ſo in nature, the picture will look the more grand.

4. ATTITUDES ought to ſuit the ages and qualities of perſons and their tempers. In old men and women, they ſhould be grave, majeſtic, and ſometimes bold: and generally, in women, they ought to have a noble ſimplicity and modeſt cheerfulneſs: for modeſty ought to be the character of women; a charm infinitely beyond coquetry: and indeed coquettes themſelves care not to be painted ſuch. Attitudes are of two kinds: one in motion, the other at reſt. Thoſe at reſt may ſuit every perſon: but thoſe in motion are proper for young people only, and are hard to be expreſſed; becauſe a great part of the hair and drapery muſt be moved by the air; motion, in painting, being never better expreſſed than by ſuch agitations. The attitudes at reſt muſt not appear ſo much at reſt as to ſeem to repreſent an inactive perſon, and one who fits for no other purpoſe but to be a copy. And though the figure that is repreſented be at reſt, yet the painter, if he thinks fit, may give it a flying drapery, provided the ſcene or ground be not a chamber or cloſe place.

It is above all things neceſſary that the figures which are not employed ſhould appear to ſatisfy the ſpectator's curioſity; and for this purpoſe ſhow themſelves in ſuch an action as ſuits their tempers and conditions, as if they would inform him what they really were; and as moſt people pretend to ſincerity, honeſty, and greatneſs of mind, we muſt avoid, in attitudes, all manner of affectation; every thing there muſt appear eaſy and natural, and diſcover more or leſs ſpirit, nobleneſs, and majeſty, in proportion to the perſon's character and dignity. In a word, the attitudes are the language of portraits; and the ſkilful painter ought to give great attention to them. But the beſt attitudes are ſuch as induce the ſpectator to think that the ſitter took a favourable opportunity of being ſeen to advantage, and without affectation. With regard to women's portraits, in whatever attitude they are placed, they ſhould ſway in ſuch a manner as to give their face but little ſhade; and we ſhould carefully examine whether the lady appear moſt beautiful in a ſmiling or in a ſerious air, and paint her accordingly.

According to DE PILES, portraiture requires three different ſittings and operations; to wit, dead colouring, ſecond colouring, and retouching or finiſhing. Before the painter dead-colour, he muſt attentively conſider what aſpect will beſt ſuit the ſitter, by putting him in different poſitions, if he have not any ſettled deſign; when this is determined, it is of the utmoſt conſequence to put the parts well together, by comparing always one part with another; for not only the portrait acquires a greater likeneſs when well deſigned, but it is troubleſome to make alterations at the ſecond ſitting, when the artiſt ſhould only think of painting, that is, of diſpoſing and uniting his colours.

I. The dead-colouring ought to be clean, becauſe of the ſlope and tranſparency of the colours, eſpecially in the ſhades; and when the parts are well put together, and become clammy, they muſt be judiciouſly ſweetened and melted in each other; yet without taking away the air of the picture, that the painter may finiſh it, in proportion as he draws. But if fiery geniuſes do not like this method of ſcumbling, let them only mark the parts ſlightly, and ſo far as is neceſſary for giving an air. In dead-colouring, it is proper to put in rather too

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little than too much hair about the forehead; that, in finishing, we may be at liberty to place it where we please, and to paint it with all possible softness and delicacy. If, on the contrary, you sketch upon the forehead a lock which may appear to be of a good taste, and becoming the work, you may be puzzled in finishing it, and not find the life exactly in the same position as you would paint it.

II. The business of the second sitting is, to put the colours well in their places, and to paint them in a manner that is suitable to the sitter and to the effect we propose; but before they are made clammy, we ought to examine afresh whether the parts are rightly placed, and here and there to give some touches towards likeness, that, when we are assured of it, the work may go on with greater satisfaction. If the portrait be justly designed, the painter ought, as much as possible, to work quick, as the work will thus have the more spirit and life. But this readiness is only the effect of long study and experience.

III. Before we retouch or finish, it is proper to terminate the hair, that, on finishing the carnations, we may be able to judge of the effect of the whole head. If, at the second sitting, we cannot do all we intended, which often happens, the third makes up the loss, and gives both spirit, physiognomy, and character. If we would paint a portrait at once, we must load the colouring; but neither sweeten nor drive, nor very much oil it; and if we dip the pencil in varnish as the work advances, this will readily enable us to put colour on colour, and to mix them without driving. There is nothing so rare as fine hands, either in the design or colouring. It is therefore convenient to cultivate a friendship with some women, who will take pleasure in serving for a copy. But if an opportunity occurs of copying hands after Vandyke, it must not be let slip; for he drew them with a surprising delicacy, and an admirable colouring. It is of great service to copy after the manners which come nearest to nature; as are those of Titian and Vandyke.

Before we begin colouring, we must catch the very first moments, which are commonly the most agreeable and most advantageous, and to keep them in our memory for use when we are finishing; for the sitter, growing tired with being long in the same place, loses those spirits which, at his first sitting down, gave beauty to the parts, and conveyed to the tint more lively blood, and a fresher colour. In short, we must join to truth a probable and advantageous possibility, which, far from abating likeness, serves rather to set it off. For this end, we ought to begin with observing the ground of a tint, as well what it is in lights as in shades; for the shades are only beautiful as they are proportioned to the light. We must observe, if the tint be very lively, whether it partake of yellowness, and where that yellowness is placed; because usually, towards the end of the sitting, fatigue diffuses a general yellowness, which makes us forget what parts were of this colour, and what were not, unless we had taken due notice of it before. For this reason, at the second sitting, the colours must be everywhere readily clapped in, and such as appear at the first sitting down; for these are always the finest.

The surest way to judge of colours is by comparison; and to know a tint, nothing is better than to compare it with linen placed next it, or else placed next to the natural object, if there is occasion. The portrait being now finished, nothing remains, but, at some distance of time, to view both the picture and sitter together, to determine with certainty, whether there is any thing still wanting to the work.

Sect. IV. *Of* Theatrical Decorations; Designs *for* Furniture, Embroidery, Carriages, &c.

Theatrical Decorations require a particular art which unites several of the general parts of painting with the knowledge of architecture, perspective, &c. They who apply themselves to it would do well to design their decorations by day, and to colour them by candle-light, as they will be much better able to judge of the effect of a painting intended to be viewed by that light.

The designs for *furniture*, *carriages*, *porcelain*, and other branches of manufacture, form also a very important article of painting in general, and of academy painting in particular. This is a distinct branch of the art; and without doubt not the least useful, as it contributes so essentially to the success of manufactures, and consequently to the prosperity of a state; and it is an art, to which it were much to be wished that youth of ability and invention would apply themselves. See Japanning and Porcelain.

Sect. V. *Of the* Different Methods *of* Painting.

1. The most simple of all methods of painting, and doubtless the first discovered and used, is painting in Water Colours. See *Part* III.

2. Painting in oil is preferable to all other methods, as it is more susceptible of all sorts of expressions, of more perfect gradations of colours, and is at the same time more durable. See *Part* III. *Sect.* III.

3. Mosaic painting, is performed by joining together a great number of small pieces of marble of different colours, with stucco. Works of this kind are made principally at Rome, where this art has been carried so far as to resemble the paintings of the greatest masters; and of these are made monuments for the latest posterity. See Mosaic, N° II. § i—vii.

4. Painting in fresco is performed by drawing with colours diluted with water, on a wall newly plastered, and with which they so incorporate, that they perish only with the stucco itself. This is principally used on ceilings. See Fresco, § 2.

5. Miniature painting is performed with water colours, or with gum-arabic; and represents objects in the least discernible magnitudes. See Miniature, § 2.

6. Painting in crayons. Colours, either simple or compound, are mixed with gum, and made into a kind of hard paste like chalk, with which they draw on paper and parchment. See Crayon, § 2.

7. Pain-

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7. Painting in ENAMEL is performed on copper or gold, with mineral colours that are dried by fire, and become very durable. See ENAMEL, § 3. The paintings on the PORCELAIN of China and Europe, on Delft wares, &c. are so many sorts of enamel. See DELFT, § 3, and ENAMEL, § 4.

8. Painting in WAX, or ENCAUSTIC painting, is a new invention, or rather an old one renewed, in which there are in France performances highly pleasing. It is done with wax mixed with varnish and colours.

9. Painting on GLASS, of which there are various kinds. See GLASS, § 23, i. ii.

10. ELYDORIC Painting, a new species, invented by M. Petit.

Most of these methods of painting being described in their order, under the articles above referred to, we have only to describe the four following here.

§ I. *Of* PAINTING *in* FRESCO.

OF all kinds of painting, fresco is the most durable, the most speedily executed, and the most proper to adorn great buildings. It appears, that the fragments of ancient painting handed down to us by the Romans are all in fresco. NORDEN, quoted by Winckleman, speaks of the ruins of Egyptian palaces and temples, in which are Colossian paintings on walls 80 feet high. The description which those authors have given of these paintings, of the prepared ground, and of the manner in which the colours have been employed, &c. shows plainly that they have been executed in fresco.

The stability of fresco is demonstrated by the existence of those fragments of the highest antiquity. There are no other kinds of painting which could equally have resisted the injuries of the weather, the excessive aridity of certain elements, the moisture of subterraneous situations, and the destructions by barbarians. In making paintings in fresco, the choice of place, when they are without doors, is of the greatest importance. In countries where there is little or no frost, an exposure to the north is the most favourable; and in cold climates a western exposure should be made choice of, because the first rays of the rising sun have a very pernicious effect after frost.

The choice of materials is the next thing of importance in executing fresco. To make it durable, the ground is the object of chief attention; and to make this perfect, the mortar used by the ancients, now unknown, would be necessary. It is easy to perceive, that a minute detail of forms, an extensive mixture and gradation of tints, and the merit of a delicate and gentle touch, can make no part of the excellencies of this kind of painting. It cannot bear a close examination like a picture in oil. There is always something dry and rough which displeases. An artist who would flatter himself with success in a fresco placed near the eye would be grossly deceived; a common spectator would find it coarse and badly finished.

Fresco is chiefly employed in palaces, temples, and public edifices. In these vast places no kind of painting can be preferred to it; large, vivid in its strokes, and constantly fresh, it enriches the architecture, animates it, and gives relief to the eye from the repetition of the same forms, and the monotony of colour, in a place where coloured marbles and bronzes are not employed. A fine fresco gives the greatest effect to a lofty building, which serves as a frame and support to this enchanting art, which fixes the attention of every person of sensibility and taste. Fresco has a freshness, splendour, and vigour not to be found in oil or water colours.

A known principle in all painting is, that the colouring is more perfect in proportion as it approaches to the lights and shades in nature. As colours applied to any subject can never reach this degree of perfection, the illusion which painters produce consists in the comparison and opposition of the tones of colours among themselves.

If the white of the finest and purest oil appears heavy and grey, compared with great lights in natural whites, it follows, that, in order to copy them with fidelity, the tones which follow the first white must be degraded in an exact proportion. Thus it is necessary that the shades of a picture be considerably deeper than those of the model; especially, if, from the greatest lights to the browns, one hath proportionally followed the distance which is found between the colours on the pallet and the tones of the object copied. Now, if the white of fresco be infinitely more bright than that of oil, the same effect will be obtained in a brown tone. On the other side, if it constantly happens that the brown tones of fresco are much more vigorous than those of water colours, and equal even to the browns of oil itself, it is certain that it possesses a splendour and vigour more extensive than any other kind of painting. Thus, in the hands of an artist who is well acquainted with the colours fit for fresco, it is more susceptible of the general effect, and more capable than any other kind, of giving projection and the semblance of life to the figures.

If we inquire why painting in fresco is now seldom or never practised, we may ascribe it to the great talents required to execute it. "Many of our painters (says VASARI in his *Treatise on Painting*) excel in oil and water colours, and yet fail in fresco; because of all kinds this requires the greatest strength of genius, boldness in the strokes, and resolution." If in an age abounding in great masters it was difficult to excel in this kind, it must be much more so in ours; but we should not require the characters of sublimity and style to which men were accustomed in the time of Vasari.

We should execute in fresco as we do in oils; for Italy herself along with Michael Angelo and Zuicharo, had Gortonni Giordano and Francischini as middling fresco-painters. And in France, Lafosse, Bon Boulogne, and Perrir, performed several works in fresco, which might be imitated by the painters of our times. But the real causes for abandoning this art proceed from the want of knowledge and taste in the persons who employ the artists, and from the manners of the age. As a pleasant or licentious conceit, unfinished colouring, and bold effects of shade, are the chief objects of consideration, a very smooth painting, enlivened by gentle touches, completely gratifies the person who pays the price; and therefore the philosophical principles of the art, which require study, are not cultivated.

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The mechanical process of this useful and beautiful kind of painting, is as follows: Before painting it is necessary to apply two layers. If the wall on which you are to paint is of brick, the layer is easily applied; but if it is of freestone closely united, it is necessary to make excavations in the stone, and to drive into them nails or pegs of wood in order to hold the first layer.

The first layer is made of good lime and a cement of pounded brick, or, which is still better, river sand; this latter forms a layer more uneven, and better fitted to retain the second smooth and polished layer applied to its surface. There should be experiments to discover a layer still more compact, and more independent of the variations of the air; such, for example, as covers the aqueducts and ancient reservoirs constructed by the Romans in the neighbourhood of Naples.

Before applying the second layer, or what you are to paint, it is necessary that the first be perfectly dry; for their issues from the lime, when it is moist, a smell both disagreeable and pernicious to the artist. When the first layer is perfectly dry, it is wet with water in proportion to its dryness, that the second layer may the more easily incorporate with it.

The second layer is composed of lime, slaked in the air, and exposed for a year, and of river sand, of an equal grain, and moderately fine. It requires an active and intelligent mason to apply this layer, as the surface must be altogether equal. The operation is performed with a trowel; and the operator requires to have a small piece of wood to take away the large grains of sand, which, remaining, might render the surface uneven. To give a fine polish to this layer, one ought to take a sheet of paper, apply it to the wall, and pass and repass the trowel over the paper. By these means the little inequalities which hurt the exactness of the stroke, and which produce false appearances at a distance, are entirely smoothed. The artist must not lay more than the painter can finish in a day, as this kind of painting must be executed on a fresh ground.

The layer being thus prepared, the painter begins his operation; but as painting in fresco must be executed rapidly, and as there is no time to retouch any of the strokes, the painter takes care to provide himself with large cartoons, on which he has drawn, with exactness, and in their full size, the figures which he is to paint, which leaves him nothing to do but to copy them on the wall.

The cartoons are composed of several sheets of large paper pasted one on another, neither too thick nor too slender. The painter traces the tracks of the figures on the plaster, by passing a steel point over the tracks in the cartoons, or in pricking them. Having thus attained an exact and speedy drawing, it now remains to execute the painting. But it is essential, when one wishes to finish any small work of this kind, in the first place, to be informed of the proper colours, and of those which cannot be used.

In general, the colours extracted from earths, and those which have passed through the fire, are the only ones which can be employed in this kind of painting. The colours are white, made of lime, the white of egg-shells, ultramarine, the black of charcoal, yellow ochre, burnt vitriol, red earth, green of Verona, Venetian black, and burnt ochre.

There are others which require to be used with great precaution, such as enamel blue, cinnabar, and white marble dust. When enamel blue is used, it requires to be applied instantaneously, and when the lime is very moist, otherwise it does not incorporate with the plaster; and if one retouch with this colour, it must be done an hour or more after the first application, to increase its lustre. With regard to the white marble dust, it is apt to turn black if it be not mixed up with a proper quantity of white lime.

Cinnabar, which has a splendour almost superior to all other colours, loses it almost entirely when mixed with lime. At the same time, it may be employed in places not exposed to the air, with a little degree of care in the preparation. Reduce a quantity of the purest cinnabar to powder, put it into an earthen vessel, and pour lime-water on it for two or three times. By this process the cinnabar receives some impression of lime-water, which makes it capable of being employed in fresco-painting.

One of the best colours, and the one most used in fresco for the gradation of tints, and for giving the requisite tone, is *white of lime*. This white is prepared by mixing lime slaked long before with good water. The lime deposits a sediment at the bottom of the vessel; when the water is poured off, this sediment is the white of lime.

Another kind of white might be used, the effects of which would be known by experience, namely, the *white of egg shells*. To prepare this white, one must take a great quantity of shells of eggs, which must be pounded and boiled in water along with a quantity of quick lime; after this, they are put into a strainer, and washed repeatedly with fountain water. The shells are again pounded until the water employed for that purpose become pure and limpid; and when they are in this manner reduced to powder, this powder is grinded in water, and formed into small pieces, and dried in the sun.

All the different kinds of ochres make excellent colours for fresco, and take different shades, being previously burned in iron chests. With regard to the Naples-yellow, it is dangerous to use it where the painting is much exposed to the air. The blacks of charcoal, of peach stones, and of vine twigs, are good; but that extracted from bones is of no value.

Roman vitriol gathered at the furnaces, and called *burnt vitriol*, grinded afterwards in spirit of wine, resists the air extremely well when employed in lime. There is also a red extracted from this preparation somewhat like that produced from lac. This colour is very proper for preparing the layers to be coloured with cinnabar; and the draperies painted with these two colours will vie in splendour with those painted with fine lac in oil.

The ultramarine is the most faithful colour; and it not only never changes, but it communicates this precious quality to those colours with which it is mixed.

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The manner of employing these colours, is to grind them in water, and to begin by arranging them into the principal tints to be employed; these are afterwards put into pots; and it is necessary to use many pallets raised at the edges, to form the intermediate shades, and to have under one's eye all the shades required. As all the tints, except burnt ochre, violet, red, and blacks of all kinds, are apt to become clear, the painter must have beside him some pieces of brick or new tile very dry. A dash of the colours is applied to one of these with the pencil, before using them; and as the tile instantaneously imbibes the water, one perceives what the shade will be after the fresco is dry.

§ II. *Of* PAINTING *with* CRAYONS.

The student must provide himself with strong blue paper, the thicker the better, if the grain is not too coarse. The knots should be levelled with a penknife or razor, otherwise they will prove exceedingly troublesome. The paper must be pasted very smooth on a linen cloth, previously strained on a deal frame, the size according to the artist's pleasure; on this the picture is to be executed; but it is most eligible not to paste the paper on till the whole subject is first dead-coloured. The method of doing this is by laying the paper with the dead-colour on its face, upon a smooth board, when, by a brush, the back side of the paper must be covered with paste; the frame with the strained cloth must then be laid on the pasted side of the paper; after which, turn the painted side uppermost, and lay a piece of clean paper upon it, to prevent smearing it: this being done, it may be stroked gently over with the hand; by which means all the air between the cloth and the paper will be forced out.

When the painters want to make a very correct picture, they generally use tiffany or black gauze, strained tight on a frame, which they lay flat on the subject to be imitated, and with a piece of chalk, trace all the outlines on the tiffany. They then lay the canvas to be painted on, flat upon the floor, placing the tiffany with the chalked lines upon it, and with an handkerchief, brush the whole over; this presents the exact outlines of the picture on the canvas. The crayon-painter may also use this method when the subject of his imitation is in oils; but in copying a crayon-picture, he must have recourse to the following method, on account of the glass.

The picture being placed on the easel, let the outlines be drawn on the glass with a small camel's hair pencil, dipped in lake, ground thin with oils, with great exactness. After this, take a sheet of paper of the same size, and place it on the glass, stroking over all the lines with the hand, by which means the colour will adhere to the paper, which must be pierced with pin holes pretty close to each other. The paper intended to be used for the painting must next be laid upon a table, and the pierced paper placed upon it; then with some fine pounded charcoal, tied up in a piece of lawn, rub over the pierced lines, which will give an exact outline; but great care must be taken not to brush this off till the whole is drawn over with sketching chalk, which is a composition made of whiting and tobacco-pipe clay, rolled like the crayons, and pointed at each end. When a student paints from the life, it is proper to make a correct drawing of the outlines on another paper, the size of the picture he is going to paint, which he may trace by the preceding method.

The student will find the sitting posture, with the box of crayons in his lap, the most convenient method for him to paint. The part of the picture he is painting should be rather below his face, else the arm will be fatigued. Let the windows of the room be darkened, at least to the height of six feet from the ground; and the subject to be painted should be placed so, that the light may fall with every advantage on the face.

The features being correctly drawn with chalks, take a crayon of pure carmine, and carefully draw the nostril and edge of the nose next the shadow; then, with the faintest carmine teint, lay in the highest light upon the nose and forehead, which must be executed broad. Then proceed gradually with the 2d teint, and the succeeding ones, till he arrives at the shadows, which must be enriched with much lake, carmine, and deep green. The several pearly teints discernible in fine complexions must be imitated with blue verditer and white, which answers to the ultramarine teints used in oils. But if the parts of the face where these teints appear are in shadow, the crayons composed of black and white must be substituted in their place.

Let the student be careful when he begins the eyes, to draw them with a crayon inclined to the carmine teint, of whatever colour the irises are; he must lay them in brilliant, and at first, not loaded with colour, but executed lightly. The student must let the light of the eye incline very much to the blue cast, avoiding a staring white appearance, but preserving a broad shadow thrown on its upper part by the eye-lash.

The student should begin the lips with pure carmine and lake, and in the shadow use some carmine and black; the strong vermilion teints should be laid on afterwards. He must form the corner of the mouth with carmine, brown ochre, and greens, variously intermixed. If the hair is dark, he should preserve much of the lake and deep carmine teints therein.

After he has dead-coloured the head, he is to sweeten the whole together, by rubbing it over with his finger, beginning at the strongest light upon the forehead, passing his finger very lightly, and uniting it with the next teint, which he must continue till the whole is sweetened together, often wiping his finger on a towel, to prevent the colours being sullied. When the head is brought to some degree of forwardness, let the back ground be laid in, which must be done by covering it as thin as possible, and rubbing it into the paper with a leathern stump. Near the face the paper should be almost free from colour. The ground, being painted thin next the hair, affords an opportunity of painting the edges of the hair over in a light and free manner at finishing.

The above method properly executed, produces the appearance of a painting composed of three colours, viz. carmine, black, and white,

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which is the beſt preparation a painter can make for the producing a fine crayon picture. The next ſtep is, to complete the back ground and the hair; thence proceed to the forehead, finiſhing downward.

In painting over the forehead the laſt time, begin the higheſt light with the moſt faint vermilion teint, in the ſame place where the faint carmine was firſt laid, keeping it broad in the ſame manner. In the next ſhade, the ſtudent muſt work in ſome light blue teints, compoſed of verditer and white, intermixing with them ſome of the deepeſt vermilion teints, inſenſibly melting them into one another. Some brilliant yellows may alſo be uſed, and towards the roots of the hair, ſtrong verditer teints, intermixed with green, will be of ſingular ſervice. Cooling crayons, compoſed of black and white, ſhould ſucceed theſe, and melt into the hair. Beneath the eyes, the ſweet pearly teints are to be preſerved, compoſed of verditer and white, and under the noſe, and on the temples, the ſame may be uſed; beneath the lips, teints of this kind alſo are proper, mixing them with the light greens and ſome vermilion. In finiſhing the cheeks, let the pure lake clear them from any duſt contracted from the other crayons; then with the lake may be intermixed the bright vermilion; and laſt of all, a few touches of the orange-coloured crayon, but with caution.

The eye is the moſt difficult feature to execute in crayons, as every part muſt be expreſſed with the utmoſt nicety, to appear finiſhed; at the ſame time that the painter muſt preſerve its breadth and ſolidity while he is particularizing the parts. To accompliſh this, the ſtudent ſhould uſe his crayon in ſweetening as much, and his finger as little as poſſible. When he wants a point to touch a ſmall part with, he may break off a little of his crayon againſt the box, which will produce a corner fit to work with in the minuteſt parts. When the eye-balls are ſufficiently prepared, the ſhining ſpeck muſt be made with a pure white crayon, which ſhould be firſt broken to a point, and then laid on firm; but as it is poſſible they may be defective in neatneſs, they ſhould be corrected with a pin, taking off the redundant parts, by which means they may be formed as neat as can be required.

The difficulty, with reſpect to the noſe, is to preſerve the lines properly determined, and at the ſame time, ſo artfully blended into the cheek, as to expreſs its projection, and yet no real line to be perceptible upon a cloſe examination; in ſome circumſtances it ſhould be quite blended with the cheek, which appears behind it, and determined entirely with a ſlight touch of red chalk. The ſhadow cauſed by the noſe, is generally the darkeſt in the whole face. Carmine and brown ochre, carmine and black, and ſuch brilliant crayons, compoſe it beſt.

The ſtudent having prepared the lips with the ſtrongeſt lake and carmine, &c. muſt with theſe colours make them completely correct; and when finiſhing, introduce the ſtrong vermilions, but with caution. This, if properly touched, will give the lips an appearance equal, if not ſuperior to thoſe executed in oils, notwithſtanding the ſeeming ſuperiority the latter has, by means of glazing, of which the other is entirely deſtitute.

When the ſtudent paints the neck, he ſhould avoid expreſſing the muſcles too ſtrong in the ſtem; nor ſhould the bones appear too evident on the cheſt. The moſt neceſſary part to be expreſſed, is a ſtrong marking juſt above the place where the collar bones unite; and if the head is much thrown over the ſhoulders, ſome notice ſhould be taken of the large muſcle that riſes from behind the ear, and is inſerted into the pit between the collar bones. All inferior muſcles ſhould be avoided. In colouring the neck, let the ſtudent preſerve the item of a pearly hue, and the light not ſo ſtrong as on the cheſt. If any part of the breaſt appears, its tranſparency muſt alſo be expreſſed by pearly teints; but the upper part of the cheſt ſhould be coloured with beautiful vermilions delicately blended with the other.

Dark blue, purple, black, pink, and all kinds of red *draperies* alſo, ſhould be firſt tinged with carmine, which will render the colours much more brilliant than any other method; over this ſhould be laid on the paper the middle teint, except the dark maſſes of ſhadow, which ſhould be laid on at firſt as deep as poſſible; theſe, ſweetened with the finger, will exhibit a maſterly breadth, which the leſſer folds, when added, ought by no means to deſtroy. With the light and dark teints, the ſmaller parts are next to be made with freedom, executing as much with the crayon, and as little with the finger as poſſible; in each fold touching the laſt ſtroke with the crayon, which ſtroke the finger muſt never touch. In the caſe of reflections, the ſimple touch of the crayon will be too harſh, therefore fingering will be neceſſary afterwards, as reflected lights are always more gentle than thoſe which are direct. With reſpect to reflections in general, they muſt always partake of the ſame colour as the object reflecting, but in the caſe of ſingle figures, it may be uſeful to make ſome particular obſervations.

In a blue drapery, let the reflections be of a greeniſh caſt; in green draperies, make them of a yellow teint; in yellow, of an orange; in orange, reflect a reddiſh caſt; in all reds, ſomething of their own nature, but inclined to the yellow: black ſhould have a reddiſh reflection; the reflection of a reddiſh teint will alſo preſent purples to the beſt advantage. Of whatever colour the drapery is, the reflection on the face muſt partake thereof, otherwiſe the picture, like paintings on glaſs, will have but a gaudy effect. Linen, lace, fur, &c. ſhould be touched ſpiritedly with the crayon, fingering very little except the latter; and the laſt touches even of this, like all other parts, ſhould be executed by the crayon, without ſweetening with the finger.

The methods above recommended, have been practiſed by the moſt celebrated crayon-painters, whoſe works have been held in public eſtimation; but the knowledge of, and ability to execute each ſeparate part with brilliancy and truth, will be found very inſufficient to conſtitute a complete painter, unleſs he unite them with each other by correctneſs of drawing, propriety of light and ſhadow, and harmony of colouring. To accompliſh

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compliſh this, the ſtudent ſhould carefully avoid finiſhing one part, till he has properly conſidered the connection it is to have with the reſt.

MATERIALS. The perfection of the crayons conſiſts, in a great meaſure, in their ſoftneſs; for it is impoſſible to execute a brilliant picture with them if they are otherwiſe; on which account, great care ſhould be obſerved in the preparing them, to prevent their being hard. In all compoſitions, flake-white and white-lead ſhould be wholly rejected, becauſe the lighteſt touch with either of theſe will unavoidably turn black. They are ſubject to change; but whenever this happens, it is entirely owing to an injudicious uſe of the above-mentioned whites, which will ſtand only in oils. To obviate the bad effects of ſuch crayons, the common whiting, prepared as follows:

Take a large veſſel of water, put the whiting into it, and mix them well: let this ſtand about half a minute, then pour off the top into another veſſel, and throw the gritty ſediment away; let what is prepared reſt about a minute, and then pour it off as before, which will purify the whiting. When this is done, let the whiting ſettle, pour the water from it; after which, lay it on the chalk to dry, and keep it for uſe, either for white crayons, or for preparing teints with other colours, for with this all other teints may be ſafely prepared. All colours of a heavy or gritty nature, eſpecially blue verditer, muſt be purified by waſhing after this method.

The ſtudent muſt have a large, flexible pallet-knife, a large ſtone and muller to levigate the colours, two or three large pieces of chalk to abſorb the moiſture from the colours after they are levigated, a piece of flat glaſs to prevent the moiſture from being abſorbed too much, till the colours are rolled into form, and veſſels for water, ſpirits, &c. as neceſſity and convenience ſhall direct.

I. REDS. Good carmine is inclined to the vermilion tinty and good lake to the carmine teint. The carmine crayons are thus prepared:

1. *Carmine.* As their texture is inclinable to hardneſs, inſtead of grinding and rolling them, take a ſufficient quantity of carmine, lay it upon the grinding-ſtone, mix it with a levigating knife with ſpirit of wine, till it becomes ſmooth and even. The chalk-ſtone being ready, lay the colour upon it to abſorb the ſpirit, but be careful that it is laid on in a proper ſhape for painting. If it is levigated too thin, the crayons will be too flat; and if too thick, it will occaſion a waſte of colour, by their adhering to the pallet-knife. The next ſtep is to compoſe the different teints by a mixture with whiting; the proportion conſiſts of 20 gradations to one. Take ſome of the ſimple colour, and levigate it with ſpirit of wine, adding about one part of waſhed whiting to three parts of carmine, of which, when properly incorporated, make two parcels. The next gradation ſhould be compoſed of equal quantities of carmine and whiting, of which 4 crayons may be made. The 3d compoſition ſhould have one 4th carmine, and 3 the whiting; of this make 6 crayons, which will be a good proportion with the reſt. The laſt teint ſhould be made of whiting, very faintly tinged with carmine, of which make about 8 crayons, which will complete the above-mentioned proportion.

2. *Lake* is a colour very apt to be hard; to prevent which, take about half the quantity of lake intended, and grind it very fine with ſpirit of wine; let it dry, and then pulverize it, which is eaſily done if the lake is good: then take the other half, and grind it with ſpirits, after which, mix it with the pulverized lake, and lay it out directly in crayons on the chalk. This colour will not bear rolling. The ſimple colour being thus prepared, proceed with the compound crayons as directed before, and in the ſame degrees of gradation as the carmine teints.

3. *Vermilion.* The beſt is inclined to the carmine teint. Nothing is required to prepare this colour, more than to mix it on the ſtone with ſoft water or ſpirits, after which it may be rolled into crayons. Various teints are produced by a mixture of the ſimple colour with whiting.

II. BLUES. 1. Pruſſian blue is apt to bind, and is rendered ſoft with more difficulty than carmine and lake. The ſame method of preparation is to be followed with this as directed with reſpect to lake. 2. Blue verditer is naturally gritty, and therefore ſhould be waſhed well. Its particles are ſo coarſe, as to require to be united by ſtaked plaſter of Paris about the ſize of a pea. This blue is extremely brilliant, and will be of great uſe in heightening draperies, &c. The teints muſt be formed with whiting, as above directed.

III. GREENS. In Switzerland, they have a method of making greens, ſuperior to ours. We uſually take yellow ochre, grind it with ſpirits, mix it with the powder of Pruſſian blue, then temper it with a knife, and lay the crayons on the chalk, without rolling them. Inſtead of this, ſome uſe king's yellow mixed with Pruſſian blue, and others brown ochre and Pruſſian blue. The crayons made of the two laſt may be rolled.

IV. YELLOWS. 1. King's-yellow is the moſt uſeful and the moſt brilliant, levigated with ſpirits of wine. Yellow ochre, and Naples yellow, ground with ſpirits, make uſeful crayons. 2. Orange is produced with king's-yellow and vermilion ground together with ſpirits, and the teints formed as in other caſes, but no great quantity of them is required.

V. BROWNS. 1. Cullen's earth is a fine dark brown. After 6 or 8 of the ſimple crayons are prepared, ſeveral rich compound teints may be produced from it, by a mixture with carmine, in various degrees. Roman or brown ochre is an excellent colour, either ſimple or compounded with carmine. Whiting tinged with either of theſe, proves very ſerviceable in painting. 2. Umber may be treated in the ſame manner, only it is neceſſary to levigate it with ſpirit of wine.

VI. PURPLES. Pruſſian blue ground with ſpirits, and mixed with pulverized lake, will produce a good purple. Carmine, thus mixed with Pruſſian blue, will produce a purple ſomething different from the former.

VII. BLACK. 1. Lamp-black is the only black that can be uſed with ſafety, as all others are ſub-

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ject

ject to mildew; but as good lamp-black is very ſcarce, the ſtudent ſhould make it himſelf; the proceſs is as follows: Provide a tin cone, fix it over a lamp at ſuch a height that the flame may juſt reach the cone for the ſoot to gather within it. When a ſufficient quantity is collected, take it out, and burn all the greaſe from it in a crucible. It muſt then be ground with ſpirits, and laid on the chalk to abſorb the moiſture. 1. Various grey teints may be formed from this by a mixture with whiting. 2. Vermilion mixed with carmine is a compoſition of great uſe. 3. Carmine and black is another good compound, and various gradations ſhould be made. 4. Vermilion and black is alſo a very uſeful compound. 5. Pruſſian blue and black is another good compound, and will be found of ſingular ſervice in painting draperies.

The different compoſitions of colours muſt be cut into a proper magnitude, after they are prepared, to be ROLLED into PASTILS, for uſe. Each crayon ſhould be formed in the left hand with the ball of the right, firſt formed cylindrically, and then tapered at each end. If the compoſition is too dry, dip the finger in water; if too wet, the compoſition muſt be laid upon the chalk again to abſorb more of the moiſture. The crayons ſhould be rolled as quick as poſſible; and when finiſhed, muſt be laid upon the chalk again, to abſorb all remaining moiſture.

§ III. *Of* ENCAUSTIC PAINTING.

Many colours which cannot be admitted in oil-painting, as red lead, red orpiment, cryſtals of verdegris, and red precipitate of mercury, may be uſed here. The crayons uſed in encauſtic painting are the ſame with thoſe uſed in the common way of crayon-painting, excepting thoſe that in their compoſition are too tenacious; and the method of uſing them is the ſame in both caſes.

The encauſtic painting has many peculiar advantages: though the colours have not the natural varniſh or ſhining which they acquire with oil, they have all the ſtrength of paintings in oil, and all the airineſs of water-colours, without partaking of the apparent character or defects of either; they may be looked at in any light, and in any ſituation, without any falſe glare: the colours are firm, and will bear waſhing; and a picture, after having been ſmoaked, and then expoſed to the dew, becomes as clean as if it had been but juſt painted. It may alſo be retouched at pleaſure without any detriment to the colours; for the new colours will unite with the old ones, without ſpots, as is the caſe in common ſize painting; nor is it neceſſary to rub the places to be retouched with oil as in oil pictures; it is not liable to crack, and eaſily repaired, if it ſhould chance to ſuffer any injury. The duration of this painting is alſo a very material advantage; the colours are not liable to fade and change; no damp can affect them, nor any corroſive ſubſtance injure them; nor can the colour fall off in ſhivers from the canvas. However, notwithſtanding all theſe and other advantages enumerated by the Abbe Mazeas and Mr Muntz, this art has not yet been much practiſed. Many of theſe properties belong to a much higher ſpecies of encauſtic painting afterwards diſcovered in England, the colours of which are fixed by a very intenſe heat; nor are the colours or grounds on which they are laid liable to be diſſolved or corroded by any chemical menſtruum, nor, like the glaſſy colours of enamel, to run out of the drawing on the fire. The following account of this method was communicated in a letter from Mr Joſiah Colebrooke to the earl of Macclesfield, P. R. S. in 1759.

"The art of painting with burnt wax (ſays he) has long been loſt to the world. The uſe of it to painters in the infancy of the art of painting, was of the utmoſt conſequence. Drying oil being unknown, they had nothing to preſerve their colours entire from the injury of dampe, and the heat of the ſun: a varniſh of ſome ſort was therefore neceſſary; but they being unacquainted with diſtilled ſpirits, could not, as we now do, diſſolve gums to make a tranſparent coat for their pictures: this invention, therefore, of burnt wax ſupplied that defect to them; and with this manner of painting, the chambers and other rooms in their houſes were furniſhed: this Pliny calls *encauſtus*, and we *encauſtic painting*.

"The following experiments which I have the honour to lay before your Lordſhip and the Society, were occaſioned by the extract of a letter from the Abbe Mazeas, tranſlated by Dr Parſons, and publiſhed in the ſecond part of Vol. XLIX. of the *Philoſ. Tranſ.* N° 100. concerning the ancient method of painting with burnt wax, revived by count CAYLUS." After 7 unſucceſsful attempts, related by him, but which we need not quote, "The bad ſucceſs (ſays the Count) which had attended all the former experiments, led me to conſider of what uſe the wax was in this kind of painting: and it occurred to me, that it was only as a varniſh to preſerve the colours from fading. To try this:

"*Exp.* 8. I took what the brick-layers call *fine ſtuff*, or *putty*: to this I added a ſmall quantity of burnt alabaſter, to make it dry: this it ſoon did in the open air; but before I put on any colours, I dried it gently by the fire, leſt the colours ſhould run. When it was painted, I warmed it gradually by the fire (to prevent the ground from cracking) till it was very hot. I then took white wax three parts, white reſin one part, melted them in an earthen pipkin, and with a brush ſpread them all over the painted board, and kept it cloſe to the fire in a perpendicular ſituation, that what wax and reſin the plaſter would not abſorb might drop off. When it was cold, I found the colours were not altered, either from the heat of the fire, or paſſing the brush over them. I then rubbed it with a ſoft linen cloth, and thereby procured a kind of gloſs, which I afterwards increaſed by rubbing it with an hard brush; which was ſo far from ſcratching or leaving any marks on the picture, that it became more ſmooth and poliſhed by it.

"After I had made all the foregoing experiments, in converſation with my honoured and learned friend Dr Kidby, a fellow of this ſociety, I ſaid I had been trying to find out what the encauſtic painting of the ancients was. Upon which he told me, that there was a paſſage in Vitruvius *de Architectura*, relative to that kind of painting; and was ſo good as to tranſcribe it for me from the

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the 7th book, chap. 9. *De minii temperatura.*" Vitruvius's words, tranſlated by Count Caylus, are theſe:

"But if any one is more wary, and would have the painting with vermilion hold its colour, when the wall is painted and dry, let him take Carthaginian or Barbary wax, melted with a little oil, and rub it on the wall with a hair-pencil; and afterwards let him put live coals into an iron veſſel, and hold it cloſe to the wax, when the wall, by being heated, begins to ſweat; then let it be made ſmooth: afterwards let him rub it with a candle and clean linen rags, in the ſame manner as they do the naked marble ſtatues. This the Greeks call καυσις. The coat of Carthaginian wax (thus put on) is ſo ſtrong, that it neither ſuffers the moon by night, nor the ſun-beams by day, to deſtroy the colour."

"Being ſatisfied, from this paſſage in Vitruvius, that the manner of uſing wax in Exp. 8. was right, I was now to find if the wax-varniſh thus burnt into the picture would bear waſhing. But here I was a little diſappointed; for rubbing one corner with a wet linen cloth, ſome of the colour came off; but waſhing it with a ſoft hair-pencil dipped in water, and letting it dry without wiping, the colour ſtood very well.

"A board painted, as in Exp. 8. was hung in the moſt ſmoky part of a chimney for a day, and expoſed to the open air in a very foggy night. In the morning the board was ſeemingly wet through, and the water ran off the picture. This was ſuffered to dry without wiping; and the picture had not ſuffered at all from the ſmoke or the dew, either in the ground or the colours; but when dry, by rubbing it, firſt with a ſoft cloth, and afterwards with a bruſh, it recovered its former gloſs.

"Suſpecting that ſome tallow might have been mixed with the white wax I had uſed, which might cauſe the colours to come off on being rubbed with a wet cloth, I took yellow wax which had been melted from the honeycomb in a private family, and conſequently not at all adulterated: to three parts of this I added one part reſin, and melted them together.

"*Exp.* 9. Spaniſh white, mixed with fiſh-glue, was put for a ground on a board, and painted with water colours only. The board was made warm; and then the wax and reſin were put on with a bruſh, and kept cloſe to the fire till the picture had imbibed all the varniſh, and looked dry. When it was cold, I rubbed it firſt with a linen cloth, and then poliſhed it with an hard bruſh.

"In theſe experiments I found great difficulties with regard to colours. Many water colours, being made from the juices of plants, have ſome degree of an acid in them; and theſe, when painted on an alkaline ground, as chalk, whitening, *cimolia*, and plaſter, are totally changed in their colours, and from green become brown; which contributes much to make the experiments tedious. I would therefore adviſe the uſe of mineral or metallic colours for this ſort of painting, as moſt likely to preſerve their colour: for although I neutralized Spaniſh white, by fermenting it with vinegar, and afterwards waſhed it very well with water, it did not ſucceed to my wiſh.

"Theſe experiments, and this paſſage from Vitruvius, will in ſome meaſure explain the obſcurity of part of that paſſage in Pliny which Dr Parſons, in his learned comment on the encauſtic painting with wax, ſeems to deſpair of.

"*Cerâ pingere*, was one ſpecies of encauſtic painting. Ενκαυτον, *inuſtum*, may be tranſlated, "forced in by the means of fire, *burnt in*:" for whatever is forced in by the help of fire, can be rendered into Latin by no other ſignificant word that I know of but *inuſtum*. If this is allowed me, and I think I have the authority of Vitruvius (a writer in the Auguſtan age) for it, who ſeems to have wrote from his own knowledge, and not like Pliny, who copied from others much more than he knew himſelf, the difficulty with regard to this kind of painting is ſolved, and the encauſtic with burnt wax recovered to the public.

"What he means by the next kind he mentions, *in ebore ceſtro id eſt viriculo*, I will not attempt to explain at preſent.

"The ſhip-painting is more eaſily accounted for: the practice being in part continued to this time; and is what is corruptly called *breaming*, for brenning or burning.

"This is done by reeds ſet on fire, and held under the ſide of a ſhip till it is quite hot; then reſin, tallow, tar, and brimſtone, melted together, and put on with an hair bruſh while the planks remain hot, make ſuch a kind of paint as Pliny deſcribes: which, he ſays, *nec ſole, nec ſale, ventiſque corrumpitur.* As they were ignorant of the uſe of oil-painting, they mixed that colour with the wax, &c. which they intended for each particular part of the ſhip, and put it on in the manner above deſcribed.

"In the pictures painted for theſe experiments, and now laid before your lordſhip and the ſociety, I hope neither the deſign of the landſcape, nor the execution of it, will be ſo much taken into conſideration as the varniſh (which was the thing wanted in this inquiry): and I think that will evince, that the encauſtic painting with burnt wax is fully reſtored by theſe experiments; and though not a new invention, yet having been loſt for ſo many ages, and now applied further, and to other purpoſes, than it was by Vitruvius, (who confined it to vermilion only,) may alſo amount to a new diſcovery, the uſe of which may be a means of preſerving many curious drawings to poſterity: for this kind of painting may be on paper, cloth, or any other ſubſtance that will admit a ground to be laid on it. The proceſs is very ſimple, and is not attended with the diſagreeable ſmell unavoidable in oil-painting, nor with ſome inconveniences inſeparable from that art; and as there is no ſubſtance we know more durable than wax, it hath the greateſt probability of being laſting."

Still, however, there ſeem to have been ſome defects or inconveniences attending theſe and other ſubſequent attempts: for we find the ancient or ſome ſimilar method of painting in wax remaining a deſideratum upwards of 25 years after the publication of the preceding experiments; when in 1787 a method was communicated to the

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Society of Arts, by Miss Greenland, for which she was rewarded with a prize. The ground of her information she received at Florence, through the acquaintance of an amateur of painting, who procured her the satisfaction of seeing some paintings in the ancient Grecian style, executed by Signora Parenti, a professor at that place, who had been instructed by a Jesuit at Pavia, the person who made the farthest discoveries in that art. Miss Greenland's friend knowing she was fond of painting, informed her what were the materials the painters used, but could not tell her the proportions of the composition; however, from her anxiety to succeed in such an acquisition, she made various experiments, and at last obtained such a sufficient knowledge of the quantities of the different ingredients, as to begin and finish a picture, which she afterwards presented to the Society for their inspection.

Her method is as follows: "Take an ounce of white wax, and the same weight of gum mastich powdered. Put the wax in a glazed earthen vessel over a very slow fire; and when it is quite dissolved, strew in the mastich, a little at a time, stirring the wax continually until the whole quantity of gum is perfectly melted and incorporated: then throw the paste into cold water; and when it is hard, take it out of the water, wipe it dry, and beat it in one of Mr Wedgewood's mortars, observing to pound it at first in a linen cloth to absorb some drops of water that will remain in the paste, and would prevent the possibility of reducing it to a powder, which must be so fine, as to pass through a thick gauze. It should be pounded in a cold place, and but a little while at a time, as after long beating the friction will in a degree soften the wax and gum, and instead of their becoming a powder, they will return to a paste.

"Make some strong gum-arabic water; and when you paint, take a little of the powder, some colour, and mix them together with the gum-water. Light colours require but a small quantity of the powder, but more of it must be put in proportion to the body and darkness of the colours; and to black there should be almost as much of the powder as colour.

"Having mixed the colours, and no more than can be used before they grow dry, paint with fair water, as is practised in painting with water-colours, a ground on the wood being first painted of some proper colour prepared in the same manner as is described for the picture; walnut-tree and oak are the sorts of wood commonly made use of in Italy for this purpose. The painting should be very highly finished; otherwise, when varnished, the tints will not appear united.

"When the painting is quite dry, with rather a hard brush, passing it one way, varnish it with white wax, which is put into an earthen vessel, and kept melted over a very slow fire till the picture is varnished, taking great care the wax does not boil. Afterwards hold the picture before a fire, near enough to melt the wax, but not make it run; and when the varnish is entirely cold and hard, rub it gently with a linen cloth. Should the varnish blister, warm the picture again very slowly, and the bubbles will subside. When the picture is dirty, it need only be washed with cold water."

The opinion given by the Society upon the above is: "The method made use of by Miss Greenland provides against all inconveniences: and the brilliancy of the colours in the picture painted by her, and exhibited to the Society, fully justifies the opinion, that the art of painting in wax, as above described, highly merited the reward of a gold pallet voted to her on this occasion."

We cannot conclude this branch of our subject, without taking notice of a work published at Rome upon Encaustic Painting, by Sig. Giovanni (or *John*) Fabbroni, in 1797.

According to this author, "the knowledge and use of Encaustic Painting is certainly older than the time of the Greeks and Romans, to whom the learned Requeno seems to assign the exclusive possession of this art, because the Egyptians, who with the Etruscans, were the parents of the greater part of the inventions known among mankind, and from whom the Greeks learned so much, were acquainted with, and employed encaustic painting, in the ancient ages of their greatness and splendour, as is proved by the valuable fragments of the bandages and coverings of some mummies, which he had examined. No oil painting, of only two or 300 years old, exhibits a white paint, which has kept so well as that seen on these fragments; and this circumstance sufficiently proves the superiority of the encaustic method over the common oil painting, which, notwithstanding the general opinion, cannot, he thinks, have been unknown to the ancients.

"It is impossible, (says he,) that, in Egypt and Phœnicia, where so much use was made of flax, the oil procured in abundance from that plant should have been unknown. Those who have kept oil, or who have spilt any of it, whether nut or linseed oil, must have remarked that it possesses the property of soon drying by the effects of the atmosphere; and therefore it may be easily believed, that mankind must soon have conceived the idea of employing it, particularly for ships, which as Herodotus says, were painted with red ochre in the earliest periods, and adorned with figures and ornaments. The use of oil afforded painting a much simpler and easier method than that of wax; it must therefore have been first adopted, and the transition from oil to wax must be considered as a step towards bringing the art to perfection; because encaustic painting is not exposed to the irremediable inconveniences that arise in oil painting, the value of which we extolled through ignorance, and praised as a new invention.

"Oil in general, and, in particular, drying oil, which the painters use, has naturally a strong inclination to combine itself with the oxygen of the atmosphere; and by imbibing oxygen it becomes dry, and assumes the character of resin; but the colour then becomes darker, as is the case with transparent turpentine, which gradually becomes a black pitch.

"According to the new and more accurate method of decomposing bodies, oil consists principally of hydrogen and carbon. By coming into contact

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contact with the atmosphere, and absorbing its oxygen and light, it undergoes a slow and imperceptible combustion, not essentially different from the speedy and violent one which it would undergo in the common mode of burning. It first passes, by imbibing oxygen, into the state of a more or less dark resin; loses gradually its essential hydrogen, which makes a new combination, and afterwards the oxygen itself, which has attracted the carbon; and at length leaves behind a thin layer of actual carbon, which in the end becomes black in the course of time, and considerably obscures the oil painting. By a continuance of the before mentioned slow combustion, the carbon itself as it were burns also; if it be strongly acted upon by the light, it attracts the oxygen of the atmosphere, and again brings forward the carbonic acid or fixed air, which gradually flies off. By this which I may call the *second degree of combustion*, the painting becomes dusty and friable like *crayon painting*.

"Hence it appears, that one can hope only for a transient or deceitful effect from the refreshing of oil-paintings with oil; because the harmony of the tones, which the painter establishes as suited for the moment, does not proceed with equal steps, and cannot preserve itself in the like measure for the course of a few years; as each tint, as they say, *ought to increase*, or to speak more properly *to burn*, in proportion to its antiquity. It thence follows, that mere washing may be prejudicial to an old painting; and that *refreshing* paintings, as it is called, by daubing over the surface, from time to time, with new drying oil, is highly prejudicial, and ill calculated for the intended purpose; since the oil, when it becomes dry, contracts in its whole surface, carries with it the paint under it, and occasions cracks in the painting. New oil of this kind gives occasion to mineral paints to be restored; but covers the picture with a new coat of resin, and then of carbon, which arises from the gradual combustion, and always causes more blackness, and the decay of the painting, which one wishes to preserve.

"WAX, on the other hand, undergoes a change very different from that of drying oil. Instead of becoming black by the contact of the atmosphere, it increases in whiteness, and according to its natural quality, is not decompосed in the air, and it does not strongly attract the oxygen of the calces or metallic ashes, which are commonly used in painting. Moreover, the so called *earths*, which are in themselves white, and are never variable, either by the presence or absence of oxygen, cannot be employed in oil painting, because that fluid makes them almost transparent, and causes them to remain as it were without body, and not to produce the wished for effect. That beautiful white, which may be observed on the before mentioned Egyptian encaustic, is nothing else than a simple earth, and according to our author's chemical experiments, a chalk, which is also unalterable."

That the ancients were once acquainted with the use of oil painting, and neglected it on account of the great superiority of the encaustic, our author thinks farther evident, from the different accounts which we have of the ancient painting. "Thus PETRONIUS praises the fresh appearance which the valuable works of ZEUXIS and APELLES had, even in his time; but CICERO, on the other hand, speaks of the paintings of the ancients having suffered from blackness. The former speaks of wax-painting and the latter certainly alludes to paintings in oil. It is well known that paintings with wet chalks or water colours do not become black by age, and that this is the case also with encaustic."

Sig. FABRONI, after some farther observations, to prove that metallic oxyds or calces could not have been employed as pigments on such mummies as still retain their colours fresh, adds; "Those who are acquainted with the accuracy and certainty of the method not long since introduced into chemical operations, will be convinced, that in 24 gr. of the encaustic painting, which I ventured to detach from the above-mentioned Egyptian fragment, to subject it to examination, the mixture of 100th part of a foreign substance would have been discovered with the greatest certainty; that the resin of REQUENO must undoubtedly have been perceptible to me; and that the alkali of BACHELIER and LORGNA could not have escaped the counteracting medium. But in this Egyptian encaustic I found nothing but VERY PURE WAX, though I varied my analysis in every known method. I must therefore conclude, that modern learned writers, in respect to this Egyptian mode of painting, were as far from the truth, as the accounts of ancient authors appear to me precise and satisfactory; and that the *encaustum*, with which formerly the fore part of ships and the walls of houses and temples were painted, was different from soap or resinous crayons."

Sig. FABRONI then answers the question, "In what manner can wax be rendered sufficiently liquid for the strokes of the pencil?" by quoting the words of VITRUVIUS, above cited; (*lib.* vii. c. ix.) After which he adds;

"It here appears, that the Romans, who copied the Grecian process, which the latter borrowed from the Egyptians, mixed the wax with an oil, to make it pliable under the brush; but no mastich, alkali, or honey, as has been ingeniously imagined, and which some have thought might be employed with success. The difficulty now will be confined to point out in what manner this oil was employed. It does not appear that they used those fat oils called *drying oils*; because they could have employed these as we do, without the addition of wax, which would have been superfluous. Fat oils, which do not dry, would not have been proper, as they would have kept the wax continually in a state of a soft pomade or salve. Besides, my experiments would without doubt have shown me the existence of any oily matter. "With regard to essential or volatile oils, a knowledge of them is not allowed to the ancients, as the invention of distilling is not older than the 8th or 9th century, and therefore falls in with the period of GEBER or AVICENNA." Yet it is certain, that to use wax in their encaustic painting, they must have combined it with an ethereal volatile oil, of which no traces should afterwards remain; because this was necessary for the solidity of the works, and because no oil was found in the fragment that was examined. "But NAPHTHA is such

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ſuch an oil, much lighter (ſays our author) than oil of vitriol itſelf." It is exceedingly volatile and evaporates without leaving a trace of it behind. On this account it is uſed, when ſignatures and MSS. are to be copied; becauſe the paper, which is moiſtened by it, and ſo rendered tranſparent, quickly becomes white and opaque as before, by the complete evaporation of the naphtha. That the Aſſyrians, Chaldeans and Perſians, were well acquainted with the properties of naphtha is known to every ſcholar; and hence our author thinks it highly probable, that it was uſed by thoſe nations to render wax fit for painting. It appears to me, (adds he) that the Greeks, as was the caſe with many other things, learned encauſtic from the Egyptians, who probably derived it from the Aſſyrians or Chaldeans; and if ſo, we have diſcovered the real mixture uſed for ancient encauſtic painting."

To put the matter, however, beyond a doubt, Sig. Fabbroni prepared for an eminent Saxon painter a ſolution of Venetian wax, in highly purified naphtha, deſiring him to mix it up with the colours neceſſary for painting. The artiſt complied, and both he and our author were aſtoniſhed, as well as all their friends, at the high tone which the colours aſſumed, and the agreeable luſtre which the painting afterwards acquired, when rubbed over with a ſoft cloth. A ſimilar ſolution of wax was made for another artiſt, in which the ſpirit of turpentine was uſed inſtead of naphtha with equal ſucceſs. Our author therefore concludes, we think with reaſon, that, if he has not diſcovered the real compoſition employed by the ancients in their encauſtic paintings, he has at leaſt approached much nearer to that diſcovery than any of his predeceſſors, who have employed their learned labours in the ſame field of inveſtigation. *Philoſ. Mag.*

§ IV. *Of* Elydoric Painting.

This new ſpecies of painting is little known, and capable of great improvement. The name is derived from ελαιον, *oil*, and υδωρ, *water*; becauſe theſe two liquids are employed in the operation.

Its principal advantages are, that the artiſt is able to give the greateſt finiſhing poſſible to ſmall figures in oil; to add to the mellowneſs of oil painting the greateſt beauty of water-colours in miniature, and to do it in ſuch a manner that it appears like a large picture ſeen through a glaſs which diminiſhes objects.

The following is the manner of proceeding: A piece of very fine linen, or of white taffety, is fized with ſtarch, in the moſt equal manner poſſible, on pieces of glaſs about two inches ſquare, the angles of which are blunted, in order that the cloth may cover them neatly and without wrinkles. When theſe pieces of cloth are ſufficiently dry, a layer compoſed of white lead finely grinded, and oil of pinks or of poppies, the whiteſt that can be found, is applied to them with a knife. When this layer is dry enough to admit of ſcraping, more may be applied, if neceſſary.

As it is of the greateſt importance for the preſervation of this kind of painting, that the different layers be purged of oil, in order that they may imbibe the colours applied to them, it is neceſſary that their ſurface be very ſmooth, very dry, and very hard. The artiſt is next provided with a circle of copper nearly two inches in diameter, one 4th of an inch in height, extremely thin, and painted on the inſide with black. This circle is employed to contain the water on the ſurface of the picture. The preference is given to water diſtilled from rain or ſnow; becauſe ordinary water, from the ſalts which it contains, is pernicious to this kind of painting.

The colours muſt be grinded between two oriental agates, moſt carefully preſerved from duſt, and mixed with oil of poppies, or any other fecative oil which has been extracted without fire, and pure as water. All the colours being grinded, they are placed in a ſmall heap on a piece of glaſs, which is covered with diſtilled water in a tin-box.

When the materials are thus prepared, the ſubject is ſlightly traced on one of the pieces of cloth above-mentioned, with a lead pencil. The tints are formed on the pallets from the heaps of colours under the water, and the pallet placed as uſual on the left arm, with the thumb through the aperture. The picture is held between the thumb and fore-finger, ſupported by the middle, and the neceſſary pencils between the third and little fingers. The hand is ſupported on the back of a chair, that there may be full liberty of bringing the work near, or keeping it at a diſtance from the eye. The pencils are cleaned with the eſſence of rectified turpentine.

After having made the rough draught with the colours ſtill freſh, the circle of copper, which ought to ſurround the picture, is fitted exactly to the ſurface. The diſtilled water is poured within this circle to the height of one 8th part of an inch; and the body is leaned forward till the ſight fall perpendicularly on the object. The third finger on the right hand muſt reſt on the internal right angle of the picture. The artiſt, with a fine and firm pencil, runs over the firſt draught, to give colours to the weak places, and to ſoften thoſe which appear too ſtrong.

As ſoon as the oil ſwims on the top, the water is poured off, and the picture is carefully covered with a watch-glaſs, and dried in a box with a gentle heat. When it is ſufficiently dry to be ſcraped almoſt to a level with the knife, the above operation is renewed till the artiſt is ſatisfied with his work.

In this laſt work, the artiſt feels all the advantage of this new method for finiſhing. The water poured on the picture diſcovers all the faults of the pencil, gives facility in ſearching into the bottom of the ſhades, and the power of correcting the work, and of rendering it perfect.

When the work is finiſhed, it is put under a cryſtal, where there is no admiſſion of external air, and dried with a gentle heat.

PART III.

Of OECONOMICAL PAINTING.

Sect. I. *Of the* Utensils *and* Materials *neceſſary for* Oeconomical Painting.

THE object of this Part is to give an account of

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of ſome mechanical proceedings in certain kinds of painting, calculated to preſerve and embelliſh the walls of houſes and furniture. This branch of the art extends to every part of architecture. The whole building becomes the workſhop of the artiſt; the ſtairs, the balluſtrades, the ſaſhes, the doors, and the railing of all kinds, occupying his firſt care, and then the cielings and wainſcotting. The artiſt gives to all his ſubjects a choſen and uniform tint; but he has it in his power to vary the colours on different parts of the building, in ſuch a manner as to produce the moſt pleaſing effect.

Among the utenſils of the painter, it is almoſt needleſs to mention *bruſhes* and *pencils* of all ſizes as abſolutely neceſſary. The bruſhes are made of boars briſtles, or of hair with a mixture of briſtles; they ought to be ſtraight, very ſmooth, and of a round form. Half an hour before they are uſed, it is proper to ſoak them in water, in order to ſwell the wood of the handle, and prevent the hairs from falling off; after this, they may be applied to all purpoſes, either in water colours or in oil; but for the former they require leſs ſoftening. The pencils are made of badgers hair, or any fine hairs, enchaſed in the pipes of quills of all ſizes.

The veſſel wherein the pencils are cleaned is made of copper or of tin, ſmooth below, rounded at the ends, and divided into two parts by a thin plate in the middle. The oil, or the ſubſtance with which the pencil is cleaned is contained in one of the diviſions.

The PALLET is made of the wood of the pear or apple tree, of an oval of ſquare ſhape, very ſlender, but ſomewhat thicker at the centre than at the extremities. A hole is made in one of its ſides ſufficiently large to admit the thumb of the workman. When the pallet is new, it is covered with oil of walnuts; and as often as it dries, the operation is repeated, till it be fully impregnated; it is afterwards poliſhed, and finally rubbed with a piece of linen dipped in oil of common nuts.

The painter's KNIFE is a thin flexible plate, equally ſlender on both ſides, rounded at one extremity, and the other fixed into a handle of wood.

All the VESSELS employed to hold the colours ſhould be varniſhed; a precaution neceſſary to prevent their drying too quickly.

To *grind*, is to reduce to powder the ſubſtances which give colours, on a piece of marble or any hard ſtone, by means of water, oil, or eſſence.

To *dilute*, is to impregnate a liquid with a tint in ſuch a manner as to make it capable of being applied by a bruſh. When the materials are grinded in water, it is proper to dilute them in ſize made from parchment. If they are diluted in ſpirit of wine, there muſt be no more diluted than what ſerves the immediate occaſion, as colours prepared in this manner dry very rapidly.

Colours grinded in oil are ſometimes diluted with pure oil, more frequently with oil mixed with eſſence, and commonly with the pure eſſence of turpentine; the eſſence makes the colours eaſy to work. Thoſe prepared in this manner are more ſolid, but they require more time to dry.

When colours are grinded with the eſſence of turpentine, and diluted in varniſh, as they require to be immediately applied, it is neceſſary to prepare a ſmall quantity at a time. This preparation of colours gives greater brilliancy, and dries more ſpeedily, than thoſe prepared in oil; but they require more art to manage them.

Colours, or coloured ſubſtances, are grinded with a mullet, which is employed on the ſtone till they become a very fine powder. The operation is facilitated by moiſtening them from time to time with a little water, and by collecting them under the mullet with a knife. They are afterwards laid in ſmall heaps on a ſheet of white paper, and allowed to dry in a ſituation not expoſed to duſt. Thoſe who grind white lead have a ſtone for the purpoſe, as this colour is very eaſily tarniſhed. In executing this part well, it is neceſſary to grind the colours equally and moderately; to grind them ſeparately, and not to produce a tint by mixture till the colours are well prepared. Dilute no more at a time than is to be employed, to prevent them from growing thick.

In grinding the colours, put in no more liquid than is neceſſary to make the ſolid ſubſtances yield eaſily to the mullet: the more the colours are grinded, they mix better, and give a ſmoother and more agreeable painting. Great attention ſhould be paid to the grinding and diluting of colours, that they may be neither too thick nor too thin.

SECT. II. *Of the* APPLICATION *of* COLOURS, *in* GENERAL.

1. PREPARE only the quantity neceſſary for the work, becauſe they do not keep long; and thoſe which are newly mixed are more vivid and beautiful.

2. Hold the bruſh ſtraight before you, and allow only the ſurface to be applied to the ſubject; if you had it inclined in any other direction, you will run the hazard of painting unequally.

3. It is neceſſary to lay on the colours boldly, and with great ſtrokes; taking care at the ſame time to ſpread them equally over the ſurface, and not filling up the moulding and carved work. If this accident ſhould happen, you muſt have a little bruſh to clean out the colours.

4. Stir them frequently in the veſſel, that they may preſerve always the ſame tint, and that no ſediment may remain at the bottom.

5. Take care not to overcharge the bruſh with the colour.

6. Never apply a ſecond layer till the firſt or preceding one be perfectly dry; which is eaſily known, when, in bearing the hand gently over it, it does not adhere.

7. To render this drying more ſpeedy and uniform, make always the layers as thin as poſſible.

8. Before painting, prime the ſubject; that is, give it a layer of ſize, or of white colouring oil, to fill up the pores, and render the ſurface ſmooth: thus fewer lawyers of colour or of varniſh are afterwards neceſſary.

9. Every ſubject to be painted or gilded ought to have firſt a white ground; this preſerves the colours freſh and vivid, and repairs the damage which they occaſionally receive from the air.

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SECT. III. *Of* PAINTING *in* WATER-COLOURS.

To paint in water-colours, is to do it in thoſe which are grinded in water, and diluted in ſize. There are three kinds of this painting, viz. the *common*, the *varniſhed*, and that which is called *king's white*.

1. Take care that there be no greaſe on the ſubject; if there be, ſcrape it off, or clean it with a lye, or rub the greaſy part with garlic and wormwood.

2. Let the diluted colour fall in threads from the end of the bruſh when you take it out of the veſſel; if it adheres to it, it is a proof that it wants ſize.

3. Let all the layers, eſpecially at the beginning, be laid on very warm, provided the liquid be not boiling, which would effectually ſpoil the ſubject; and if on wood, expoſe it to crack. The laſt layer, given immediately before the varniſh, is the only one which ought to be applied cold.

4. In very fine work, where it is neceſſary to have beautiful and ſolid colours, the ſubjects are prepared by ſize and proper whites, which ſerve as a ground to receive the colour, and render the ſurface very equal and ſmooth.

5. Whatever colour is to be laid on, the white ground is the beſt, as it aſſimilates moſt eaſily with the painting, which borrows always ſomething of the ground.

6. If knots of wood are found in the ſubject, it is neceſſary to rub them with garlic, to make the ſize adhere.

To make the following details ſufficiently plain, we ſhall take the meaſures to which the quantity of colours are applied at fathoms; that is to ſay, ſix feet in height by ſix feet in breadth. We ſhall afterwards fix the quantity of materials, and of liquids neceſſary to cover this ſurface. This, however, cannot be exactly defined; as ſome ſubjects imbibe the colours much more than others. The manner of employing them alſo makes a difference; as habit enables one to manage them to greater advantage than another. The firſt layer will conſume more than the ſecond; and a prepared ſubject requires leſs than one which has not been ſo.

The *fathom* above-mentioned muſt be underſtood of a ſmooth and equal ſurface; for if the wood is varied with mouldings and carving, there muſt be a difference in the quantity of colours. In general, it requires about a pound of colours to paint a ſquare fathom in water-colours. In making up this quantity, take 3-4ths of colours grinded in water, and $\frac{1}{4}$th lb. or 6 oz. of ſize to dilute it.

§ I. *Of* PAINTING *in* COMMON WATER-COLOURS.

Works which require no great care or preparation, as cielings and ſtaircaſes, are generally painted in common water-colours; i. e. with earths infuſed in water, and diluted in ſize.

i. For a common white kind of this painting, ſteep SPANISH WHITE moderately pounded in water for two hours. Infuſe a proper quantity of the black of charcoal in water for the ſame ſpace of time; mix the black and white in the proportion that the tint requires; afterwards mix them up with a pretty ſtrong ſize, ſufficiently thick and warm, and apply them to the ſubject in as many layers as may be thought neceſſary. It requires about 2 lb. of white in a pint of water, and a quantity of black in proportion to the tint, together with a part of ſize, to cover a ſquare fathom. If this be employed on old walls, they muſt be well ſcraped, the duſt bruſhed off with a hair beſom, and waſhed carefully with lime water. If on new plaſter, the colours require more ſize. All kinds of colours may be grinded in water only when the tint is made; and when they have been infuſed in water, they muſt be mixed up with ſize.

ii. The WHITE DES CARMES is a manner of whitening interior walls, whereby they are rendered extremely beautiful.

1. Procure a quantity of the very beſt lime, and paſs it through fine linen; pour it into a large tub, furniſhed with a ſpigot at the height equal to that which the lime occupies; fill the tub with clear fountain water; beat the mixture with great pieces of wood, and then allow it to ſettle for 24 hours.

2. Open the ſpigot, allow the water to run off, ſupply the tub with freſh water, and continue this operation for ſeveral days until the lime receives the greateſt degree of whiteneſs.

3. When the water is finally run off, the lime will be found in the conſiſtency of paſte; but with the quantity uſed, it is neceſſary to mix a little Pruſſian blue or indigo to relieve the brightneſs of the white, and a ſmall quantity of turpentine to give it brilliancy. The ſize proper for it is made of glove-leather, with the addition of ſome alum; and the whole is applied with a ſtrong bruſh in five or ſix layers to new plaſter.

4. The wall is ſtrongly rubbed over with a bruſh of hogs briſtles after the painting is dry; which gives it its luſtre and value, and which makes it appear like marble or ſtucco.

iii. BADEGEON is a pale yellow colour applied to plaſter, to make it appear like free-ſtones. It gives to old houſes and churches the exterior of a new building, by aſſuming the colour of ſtones newly cut.

1. Take a quantity of lime newly kilned.

2. Add to it the half quantity of what the French call *ſciure de pierre*, in which muſt be mixed of the ochre of *rue*, according to the colour of the ſtone intended to be imitated.

3. Steep the whole in a pail of water, in which is melted a pound of rock alum. When the *ſciure de pierre* cannot be obtained, uſe a greater quantity of ochre *de rue*, or of yellow ochre, or grind the ſcales of the ſtones de St Leu; paſs it through a ſieve; and along with the lime it will form a cement on which the weather will ſcarcely make any impreſſion.

iv. When the CIELINGS or ROOFS of ROOMS are new, and you wiſh to whiten them, take white of Bougival, to which add a little of the black of charcoal to prevent the white from growing reddiſh; infuſe them ſeparately in water, mix the whole with half water and half ſize of glove-leather, which being ſtrong would make the layer come off in rolls if it were not reduced with

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with water. Give two layers of this tint while it is lukewarm. If the roof has been formerly whitened, it is neceſſary to ſcrape to the quick all the remaining white; then give it two or three layers of lime to ground and whiten it; bruſh it carefully over, and give it two or three layers of the white of Bougival prepared as before.

v. *To* COLOUR *the* BACKS *of* CHIMNEYS *with* LEAD ORE, clean them with a very ſtrong bruſh, and carefully rub off the duſt and ruſt; pound about a quarter of a pound of lead ore into a fine powder, and put it into a veſſel with half a pint of vinegar; then apply it to the back of the chimney with a bruſh. When it is made black with this liquid, take a dry bruſh, dip it in the ſame powder without vinegar, and dry and rub it with this bruſh till it become ſhining as glaſs.

§ II. *Of* VARNISHED WATER-COLOURS.

The advantages of this kind of painting are, that the colours do not fade; that they reflect the light; that they give no offenſive ſmell, but permit the places to be inhabited as ſoon as finiſhed; and that the varniſh preſerves the wood from inſects and moiſture.

To make a fine varniſh on water colours, ſeven principal operations are neceſſary; namely to *ſize the wood*; to *prepare the white*, to *ſoften* and *rub the ſubject*, to *clean the moulding*, to *paint*, to *ſize*, and to *varniſh*.

1. To *ſize* the wood is to give one or two layers of ſize to the ſubject intended to be painted. Take three heads of garlic and a handful of wormwood leaves; boil them in three pints of water till they are reduced to one; paſs the juice through a linen cloth, and mix it with a pint of parchment ſize; add half a handful of ſalt and half a pint of vinegar; and boil the whole on the fire. Size the wood with this boiling liquor; allow it to penetrate into the carved and ſmooth places of the wood, but take care at the ſame time to take it as clean off the work as poſſible, or at leaſt to leave it at no place thicker than another. This firſt ſizing ſerves to fill up the pores of the wood, and to prevent the materials afterwards from collecting in a body, which would cauſe the work to fall off in ſcales. In a pint of ſtrong parchment ſize, to which add four pints of warm water, put two handfuls of white Bougival, and allow it to infuſe for half an hour. Stir it well, and give a ſingle layer of it to the ſubject very warm, but not boiling, equally and regularly laid on, and daſhed with repeated ſtrokes of the bruſh into the mouldings and carved work.

2. To prepare the *white*, take a quantity of ſtrong parchment ſize, and ſprinkle lightly over it with the hand Bougival white, till the ſize be covered with it about half an inch in thickneſs; allow it to ſoak for half an hour as near the fire as to keep it milk warm; and then ſtir it with the bruſh till the lumps are broken, and it be ſufficiently mixed. Give 7, 8, or 10 layers of this white, or as many as the nature of the work or the defects of the wood ſhall render neceſſary, giving more white to the parts which require to be ſoftened; but, in general, the layers muſt be equal both with regard to the quantity of the white and the ſtrength of the ſize. The laſt layer of the white ought to be made clearer than the reſt, by adding water. It muſt be applied more ſlightly, taking care with ſmall bruſhes to cover all the difficult places in the mouldings and carved work. Between the drying of the different layers fill up all the defects with white maſtich and ſize.

3. To *ſoften*, is to give the ſubject after the whitening a ſmooth and equal ſurface, and to *rub* it over with a pumice ſtone. The wood being dry, take little pieces of white wood and pumice-ſtone, grinded for the purpoſe into all neceſſary forms, either for the pannels or the moulding. Take cold water, heat being deſtructive of this kind of work; in ſummer it is common to add a little ice. Soften the wall with a bruſh, but only as much at a time as you can eaſily work, as the water might dilute the white and ſpoil the whole. Then ſmooth and rub it with the pumice ſtones and with the ſmall pieces of wood; waſh it with a bruſh as you ſmooth it, and rub it over with a piece of new linen, which gives a fine luſtre to the work.

4. The *mouldings* and carved work are cleaned with an iron; and the only thing to be attended to in the operation is not to raiſe the grain of the wood.

5. The ſubject thus prepared is ready to receive the *colour* intended to be given it. Chooſe your tint; ſuppoſe a ſilver colour. Grind white cruſe and Bougival white ſeparately in water, of each an equal quantity, and mix them together. Add a little blue of indigo and a very ſmall quantity of black of charcoal from the vine tree very fine, grinded alſo ſeparately, and in water; more or leſs of the one or other gives the tint required. Dilute this tint in ſtrong parchment ſize; paſs it through a bolting cloth of ſilk very fine, and lay the tint on the work, taking care to ſpread it very equally; and then give it two layers, and the colour is applied.

6. Make a weak, beautiful, and clean *ſize*; ſtir it till it cools; ſtrain it through a fine cloth, and give two layers to the work with a ſoft painting bruſh, which has been uſed, but carefully cleaned. Take care not to choak up the mouldings, nor to lay on the ſize thicker in one place than another, and ſpread it over the work very ſlightly, otherwiſe you will dilute the colours, and occaſion undulations in the painting. The beauty of the work depends on this laſt ſizing; for if any part is omitted, the varniſh will penetrate into the colours and give it a darker ſhade.

7. When the ſizing is dry, lay on two or three layers of ſpirit-of-wine *varniſh*, taking care that the place on which you lay it be warm, and the work is finiſhed.

§ III. *Of the* KING'S WHITE.

THIS derives its name from the uſe of it in the apartments of the late French king. It is in all reſpects conducted like the former, except that there is only a ſmall quantity of indigo, to take the yellow from the white, without any black of charcoal, and without varniſh. This white anſwers extremely well for apartments which are ſeldom uſed; but otherwiſe it ſpoils eaſily, eſpecially in bed-chambers. It is the beſt white where there is any kind of gilding; and in this caſe it receives a little varniſh.

SECT.

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Sect. IV. *Of* Painting *in* Oil-colours.

To paint in oil is to apply to all ſorts of ſubjects, as walls, wood, cloths, and metals, coloured earths grinded and diluted in oil. The ancients are thought to have been ignorant of this art, and the honour of this diſcovery is generally aſcribed to John Van Eyck, a Flemiſh painter. The ſecret is nothing more than ſubſtituting oil in place of water in grinding and diluting colours. By means of oil the colours are longer preſerved; and not drying ſo ſpeedily, they give painters longer time to ſmooth, finiſh, and retouch, their works; the colours being more marked, and mixing better together, give more diſtinguiſhable tints, and more vivid and agreeable gradations, and the colouring is more ſweet and delicate.

Painting in oil is of two kinds, viz. in ſimple oil, and in poliſhed oil varniſh.

§ I. General Observations on Painting in Oil.

1. When white colours, as white or grey, are grinded and diluted in oil, it is neceſſary to make uſe of the oil of walnuts; but if the colours be dark, ſuch as cheſnut, or olive, or brown, pure linſeed oil is preferable.

2. When the colours are grinded and diluted in oil, they muſt be laid on cold, except on a new or moiſt plaſter, which requires them to be boiling.

3. Every colour diluted in pure oil, or in oil mixed with eſſence, ought to fall in threads from the end of the bruſh.

4. Take care to ſtir from time to time the colour before taking it up on the bruſh, that it may preſerve an equal thickneſs, and conſequently the ſame tone. Notwithſtanding the precaution of ſtirring, if it is found to be thicker towards the bottom, it will be neceſſary to pour in from time to time a little oil.

5. In general, every ſubject which is painted in oil ought firſt to receive one or two layers of white ceruſe, grinded and diluted in oil.

6. When the painting is expoſed to the air, as in doors, windows, and other works, which cannot be varniſhed, it is neceſſary to make theſe layers with pure oil of walnuts, mixed up with about one ounce of eſſence to a pound of colours; more would make the colours brown, and occaſion them to fall off in duſt; but this quantity prevents the ſun from bliſtering the work.

7. In ſubjects on the inſide of the houſe, or when the painting is varniſhed, the firſt layer ought to be grinded and diluted in oil, and the laſt diluted with pure eſſence.

8. If copper or iron, or other hard ſubſtances, are to be painted, mix a little eſſence with the firſt layers, to make the oil penetrate into them.

9. When there are many knots in the ſubject, as in fir wood, and when the colour does not eaſily take impreſſion on theſe parts, it is neceſſary, in painting with ſimple oil, to lay on a little oil, mixed with litharge on the knots. In painting with poliſhed oil varniſh, it is neceſſary to apply a hard tint. See § V.

10. There are colours, ſuch as the French call *ſtils de grain*, black of charcoal, and eſpecially bone and ivory blacks, which are difficult to dry when grinded in oil. To remedy this inconveniency, the following ſiccatives are mixed with the colours, to make them dry; viz. litharge both of the ſilver and gold colour, vitriol or copperas, and *ſiccative oil*.

§ II. *Of the* Siccatives.

1. Do not mix the ſiccatives with the colours till they are to be employed, otherwiſe it will thicken them.

2. Mix them only in very ſmall quantities in tin, wherein there is white lead or ceruſe, becauſe theſe colours are ſiccative of themſelves, eſpecially when they are diluted in eſſence.

3. In painting which is to be varniſhed, give the ſiccative only to the firſt layer, and allow the other layers, in which there is eſſence, to dry of themſelves.

4. In dark colours in oil give to every pound of colours in diluting them half an ounce of litharge; to bright colours, a drachm of white copperas grinded in walnut oil.

5. When in place of litharge or copperas the ſiccative oil is employed, it requires a quartern of this oil to every pound of colour.

6. The siccative oil is prepared of one half ounce of litharge, as much of calcined ceruſe, as much of *terre d'ombre*, a colour with which the French paint ſhadows, and as much of talc boiled for two hours on a ſlow and equal fire, with one pound of linſeed oil, and ſtirred the whole time. It muſt be carefully ſkimmed and clarified, and the older it grows it is better.

§ III. *Of the* Quantities *of* Substances *and* Liquids.

1. Ochres and earths require more liquids both in grinding and diluting than ceruſe.

2. Different quantities of liquids are required in the grinding, only on account of greater or leſs dryneſs; but, in diluting, the quantity is always the ſame.

3. For the firſt layer after the priming, which has no relation to the colours laid on afterwards, to a ſquare fathom give 14 oz. of ceruſe, about 2 oz. of liquid to grind, and 4 oz. to dilute it. If there is a ſecond layer of the ſame materials, the quantities require to be leſs.

4. It will require 3 lb. of colour for 3 layers of a ſquare fathom. The firſt may conſume 18 oz. the ſecond 16, and the third 14.

5. To compoſe theſe 3 lb. of colour, take 2 lb. or 2½ lb. of grinded colours, and dilute them in a pint or 3 half pints of oil, mixed with eſſence or pure oil. But if the firſt layer of ceruſe is not uſed, there will be a neceſſity for a greater quantity of colours.

N. B. In the following kinds and applications of oil painting, we are to keep theſe proportions in mind.

§ IV. *Of* Painting *in* simple Oil.

1. On doors and *windows* give a layer of ceruſe grinded in oil of walnuts diluted in the ſame oil, together with a little ſiccative; then give another layer of the ſame preparation; to which, if a greyiſh colour is wanted, add a little black of charcoal and Pruſſian blue, grinded alſo in oil of walnuts. If to theſe is required to be added a third layer, grind and dilute it in pure walnut oil; obſerving that the two laſt layers be leſs clear, or have leſs oil

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oil in them than the firſt; the colour, in this caſe, is more beautiful, and leſs apt to bliſter with the ſun.

2. WALLS that are to be painted muſt be very dry; and this being ſuppoſed, give two or three layers of boiling linſeed oil to harden the plaſter; then lay on two layers of ceruſe or ochre, grinded and diluted in linſeed oil; and when theſe are dry, paint the wall.

3. To paint TILES of a ſlate colour, grind ſeparately ceruſe and German black in linſeed oil; mix them together in the proportion which the colour requires, and dilute them in linſeed oil: then give the firſt layer very clean, to prime the tiles; and make the three next layers thicker, to give ſolidity to the work.

4. To paint ARBOURS and all kinds of garden work, give a layer of white ceruſe grinded in oil of walnuts, and diluted in the ſame oil, with the addition of a little litharge, then give two layers of green, compoſed of 1 lb. of verdegris and 2 lb. of white lead, grinded and diluted in oil of walnuts. *N. B.* This green is of great ſervice in the country for doors, window-ſhutters, arbours, gardens, ſeats, rails, either of wood or iron; and in ſhort, for all works expoſed to the injuries of the weather.

5. To whiten STATUES, VASES, and all ornaments of ſtone, either within or without doors; firſt clean the ſubject well, then give one or two layers of white ceruſe, grinded and diluted in pure oil of pinks, and finiſh with giving one or many layers of white lead prepared in the ſame manner.

6. To paint on WALLS not expoſed to the air, or on new plaſter, give one or two layers of boiling linſeed oil, and continue the bruſh till the walls are fully ſoaked; then give a layer of white ceruſe, grinded in oil of walnuts, and diluted with three fourths of the ſame oil, and one fourth eſſence; and laſtly, give two layers more of white ceruſe, grinded in oil of walnuts, and diluted in oil mixed with eſſence, if it is not to be varniſhed; but in pure eſſence if it is. It is in this manner that walls are painted white. If you adopt another colour, it is neceſſary to grind and dilute it in the ſame quantities of oil and eſſence.

7. To paint CHAIRS, benches, ſtone, or plaſter, give a layer of white ceruſe grinded in oil of walnuts, and diluted in the ſame oil, into which you have caſt a little litharge to make it dry; then apply a layer of the tint you fix on, grinded in oil, and diluted in one part oil and three parts eſſence; and afterwards give two more layers of the ſame tint grinded in oil, and diluted in pure eſſence: This may be varniſhed with two layers of ſpirit of wine.

8. To make a *ſteel colour*, grind ſeparately in eſſence white ceruſe, Pruſſian blue, fine lac, and verdegris. The tone required is procured by the proper mixture of theſe ingredients. When you have fixed on the tone of colour, take about the ſize of a walnut of the ingredients, and dilute them in a ſmall veſſel in one part of eſſence and three parts of white oily varniſh. *N. B.* This colour is generally made of white ceruſe, of black charcoal, and Pruſſian blue, grinded in thick oil, and diluted in eſſence, which is the cheapeſt method of procuring it; but the former is the moſt beautiful.

9. For painting BALLUSTRADES and RAILINGS, dilute lamp-black with varniſh or vermilion; giving two layers of it, and afterwards two layers of ſpirit-of-wine varniſh. Since the diſcovery of oil painting, and the knowledge that wood is preſerved by it, and eſpecially ſince the diſcovery of a varniſh without ſmell, and which even takes away that of oil, the painting of apartments in oil has been with juſtice preferred. In fact the oil ſtops up the pores of the wood; and although it does not altogether reſiſt the impreſſion of moiſture, yet the effect is ſo little perceptible, that it is to be recommended as the beſt method of preſerving wood.

10. To preſerve *wainſcotting* in the moſt effectual manner from moiſture, it is neceſſary to paint the wall behind it with two or three layers of common red, grinded and diluted in linſeed oil. To paint the wainſcotting itſelf, give a layer of white ceruſe grinded in oil of walnuts, and diluted in the ſame oil, mixed with eſſence. This layer being dry, give two more of the colour you have adopted, grinded in oil, and diluted in pure eſſence. If the mouldings and ſculpture be wiſhed painted in a different colour, grind and dilute it in the ſame manner. Two or three days after, when the colours are fully dry, give two or three layers of the white varniſh without ſmell, which alſo prevents the offenſive ſmell of the oil colours. *N. B.* Thoſe who begin their operations in water colours, if they find it more agreeable, may finiſh it in oil colours as above.

When the pores of the wood are well ſtopped by the prepared white, a layer of white ceruſe grinded in oil of walnuts, and diluted in the ſame oil, mixed with eſſence, may be applied. This will be ſufficient, the wood being previouſly primed; and afterwards lay on your intended colour and varniſh.

§ V. *Of* PAINTING *in* OIL *with the* POLISHED VARNISH.

1. THIS is the beſt kind of oil painting, owing more to the care it requires, than to the proceedings, for they are nearly the ſame with thoſe of ſimple oil painting; the difference conſiſting only in the preparation and manner of finiſhing.

1. To paint wainſcottings of apartments with the poliſhed varniſh, it is neceſſary, in the firſt place, that the pannels be new. Then make the ſurface of the ſubject which you mean to paint very ſmooth and level, which is done by a layer, which ſerves to receive the hard tint or poliſhed ground and the colours. This layer ought to be of white, whatever colour is to be afterwards applied. It conſiſts of white ceruſe, grinded very fine in linſeed oil mixed with eſſence.

2. Make the poliſhed ground by 7 or 8 layers of the hard tint. In painting equipages, a dozen is neceſſary. The *hard tint* is made, by grinding pure white ceruſe, which has not been much calcined, very finely, in thick oil, and diluting it with eſſence. Take care that the layers of the hard tint be not only equal as to the application, but to the quantity of the white ceruſe and the oil, and to the degree of calcination. Then,

3. Soften

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on this ground with pumice-stone.

4. Polish it moderately with a piece of serge soaked in a pail of water, in which is put some powder of pumice-stone finely ground and passed through a fine sieve. There is no occasion to spare washing, as this part of the operation will not spoil with water.

5. Choose the tint with which you intend to decorate your apartment; grind it in oil, and dilute it in essence; pass it through a piece of very fine silk; give two or three layers carefully and thinly spread over the surface, as on this part of the operation depends, in a great measure, the beauty of the colour. All sorts of colours may be employed in this manner in oil of essence.

6. Give two or three layers of a spirit-of-wine varnish, if it is to wainscotting; if to the body of a coach, a varnish of oil is employed. If the varnish is to be polished, it is necessary to give 7 or 8 layers at least, laid on equally and with great precaution, not to be thicker in one place than another, which occasions spots.

7. It is again polished with pumice-stone reduced to powder, and water, and a piece of serge. If the wainscotting has been painted before, it is necessary to rub off the colour to the hard tint, which is done with pumice-stone and water, or with a piece of linen dipped in essence.

II. There is a white painting in oil, called WHITE VARNISH POLISH, which corresponds to the king's white in water colours, and is equal to the freshness and gloss of marble if it is applied to wood. To paint in this manner,

1. Give a layer of white ceruse grinded in oil of walnuts, with a little calcined copperas, and diluted in essence. But if it is applied to stone, it is necessary to employ oil of walnuts and calcined copperas alone.

2. Grind white ceruse very fine in essence, and dilute it in fine white oil, with varnish copal.

3. Give 7 or 8 layers of it to the subject. The varnish, mixed with the white ceruse dries so promptly, that three layers of it may be given in a day.

4. Soften and polish all the layers as above.

5. Give 2 or 3 layers of white lead grinded in oil of walnuts, and diluted in pure essence.

6. Give 7 or eight layers of white spirit-of-wine varnish, and then polish them.

§ VI. *Of* PAINTING *in* VARNISH.

To paint in varnish, is to employ colours grinded and diluted in varnish, either in spirit of wine or oil, on all sorts of subjects. Wainscotting, furniture, and equipages, are painted in this manner, though we shall confine ourselves to the first.

1. Give two layers of white of Bougival, diluted in a strong size, boiling hot.

2. Give a layer of what the French call *de blanc apprit*.

3. Fill up the defects of the wood with mastich in water; and when the layers are dry, smooth them with the pumice-stone.

When the wood is smooth, suppose the paint a grey colour, take one pound of white ceruse, one drachm of Prussian blue, or of black of charcoal, or ivory black; put the white into a piece of leather, so tied that the colours cannot escape; shake them till they are sufficiently mixed.

5. Put 2 oz. of colours into a quartern of varnish, mix them carefully; give one layer above the white.

6. This layer being dry, put one ounce of colours into the same quantity of varnish as above, and give a second layer.

7. To the third layer, give half an ounce of colour to the same quantity of varnish.

8. As each of these layers dry, be careful to rub them with a piece of new coarse cloth; in such a manner, however, as not to injure the colour. *N. B.* The three layers may be given in one day.

9. If a perfect lustre is wanted, add a 4th layer prepared as the 3d.

10. All other colours, as blue, &c. may be applied in the same manner. This method is the only one by which orpiment can be employed in all its beauty, but not without some of its inconveniencies. Another method of performing this kind of work is, to apply the colours and the varnish, without previously using the size and the white ground. This is extremely expeditious, but it is easy to perceive, it will want the polish and brilliancy of the other.

PAINTLICK, a town of Kentucky, 14 miles NE. of Stamford.

* PAINTURE *n. s.* [*peinture*, French.] The art of painting. A French word.—

To next realm she stretch'd her sway,
For *painture* near adjoining lay. *Dryden.*

The show'ry arch
With lifted colours, gay, or azure gules,
Delights and puzzles the beholder's eye,
That views the wat'ry brede with thousand shews
Of *peinture* vary'd. *Philips.*

PAJOT, Lewis Leon, Count, of Ofembray, a learned antiquarian, born at Paris, in 1678. His abilities obtained him the favour of Lewis XIV; and his cabinet was so celebrated for its curiosities, that it was visited by Peter the Great, and Prince Charles of Lorrain. He wrote many learned tracts inserted in the Memoirs of the Academy of Sciences.

PAJOU, a town of France, in the department of Cantal, 1½ miles from Aurillac.

* PAIR. *n. s.* [*paire*, Fr. *par*, Latin.] 1. Two things suiting one another, as a *pair* of gloves. 2. A man and wife.—

O when meet now
Such *pairs* in love and mutual honour join'd? *Milton.*

Baucis and Philemon there
Had liv'd long marry'd and a happy *pair*. *Dryden.*

3. Two of a sort; a couple; a brace.—

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All his lovely looks, his pleasing fires,
All his sweet motions, all his taking smiles,
He does into one *pair* of eyes convey. *Suckling.*
—The many *pairs* of nerves branching themselves to all the parts of the body, are wonderful. *Ray.*

(1.) * *To* PAIR. *v. a.* [from the noun.] 1. To join in couples.—

Minds are so hardly matched, that even the first,
Tho' *pair'd* by heav'n, in Paradise were curs'd. *Dryden.*

2. To unite as correspondent or opposite.

Turtles and doves with diff'ring hues unite,
And glossy jet is pair'd with shining white. *Pope.*

(2.) * *To* PAIR. *v. n.* 1. To be joined in pairs; to couple; as male and female.—

Your hand, my Perdita; so turtles *pair*. *Shak.*

2. To suit; to fit as a counterpart.—

Had our prince seen the hour, he had *pair'd*
Well with this Lord. *Shak.*

My heart was made to fit and *pair* with thine. *Rowe.*

PAIRA, a river of Persia, which falls into a lake, near Tadivan, in Tarsistan.

PAIRAM, a town of SIBU, one of the PHILIPPINE ISLANDS, inhabited chiefly by Chinese merchants and artists.

PAIRING. *n. s.* in zoology. The instinct of pairing is bestowed on every species of animals to which it is necessary for rearing their young; and on no other species. All wild birds pair; but with a remarkable difference between such as place their nests on trees and such as place them on the ground. The young of the former being hatched blind, and without feathers, require the nursing care of both parents till they be able to fly. The male feeds his mate on the nest, and cheers her with a song. As soon as the young are hatched, singing yields to a more necessary occupation, that of providing food for a numerous issue; a task that employs both parents. Eagles, and other birds of prey, build on trees, or on other inaccessible spots. They not only pair, but continue in pairs all the year round; and the same pair procreates year after year. This at least is the case of the eagles: the male and female hunt together, unless during incubation, at which time the female is fed by the male. A greater number than a single pair, are never seen in company. Gregarious birds pair, probably to prevent discord in a society confined to a narrow space. This is the case particularly of pigeons and rooks. The male and female sit on the eggs alternately, and divide the care of feeding their young. Partridges, plovers, pheasants, sea-fowls, grouse, and other kinds that place their nests on the ground, have the instinct of pairing; but differ from such as build on trees in the following particular, that after the female is impregnated, she completes her task without needing any help from the male. Retiring from him, she chooses a safe spot for her nest, where she can find plenty of worms and grass seed at hand; and her young, when hatched, take foot, and seek food for themselves. The only remaining duty incumbent on the dam is, to lead them to proper places for food, and to call them together when danger impends. Some males, provoked at the desertion of their mates, break the eggs if they stumble on them. Eider ducks pair like other birds that place their nests on the ground; and the female finishes her nest with down, plucked from her own breast. If the nest be destroyed for the down, which is remarkably warm and elastic, she makes another nest as before. If she is robbed a second time, she makes a third nest; but the male furnishes the down. The black game never pair: in spring, the cock, on an eminence, crows and claps his wings; and all the females within hearing, instantly resort to him. Pairing birds, excepting those of prey, flock together in February to choose their mates. They soon disperse; and are not seen afterward but in pairs. Pairing is unknown to quadrupeds that feed on grass. To such it would be useless; as the female gives suck to her young while she herself is feeding. If M. Buffon deserves credit, the roe-deer are an exception. They pair, though they feed on grass, and have but one litter in a year. Beasts of prey, such as lions, tygers, wolves, pair not. The female is left to shift for herself and for her young; which is a laborious task, and often so unsuccessful as to shorten the life of many of them. Pairing is essential to birds of prey, because incubation leaves the female no sufficient time to hunt for food. Pairing is not necessary to beasts of prey, because their young can bear a long fast. Add another reason, that they would multiply so fast by pairing, as to prove troublesome neighbours to the human race. Among animals that pair not, males fight desperately about a female. Nor is it unusual for 7 or 8 lions to wage bloody war for a single female. The same reason that makes pairing necessary for gregarious birds, obtains with respect to gregarious quadrupeds; those especially who store up food for winter, and during that season live in common. Discord among such would be attended with worse consequences than even among lions and bulls, who are not confined to one place. The beavers, with respect to pairing, resemble birds that place their nests on the ground. As soon as the young are produced, the males abandon their stock of food to their mates, and live at large; but return frequently to visit them while they are suckling their young. Hedgehogs pair, as well as several of the monkey kind. We are not well acquainted with the natural history of these animals; but it would appear that the young require the nursing care of both parents. Seals have a singular œconomy. Polygamy seems to be a law of nature among them, as a male associates with several females. The sea turtles have no occasion to pair, as the female performs her task at once, by laying her eggs in the sand. The young are hatched by the sun, and immediately crawl to the sea.

PAIRLER, a town of France, in the department of the Vendee, 10 miles S. of Beauvoir.

PAIS, or PAYS, [Fr.] *n. s.* A country, land, or region; a word not yet adopted into the English language, except in speaking of the *Pais de Vaud*. See VAUD. Nor does our language stand in need of it. All appellative nouns ought to be translated;

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lated; otherwiſe thoſe unacquainted with the language muſt miſtake them for *proper names*. Our language is daily burthened with barbariſms of this kind, imported by pedants from France and the Eaſt Indies.

PAISAGE, *n. ſ.* A landſcape. *Phil. Aſh.*

PAISHAW, a title of honour, and command, in the E. Indies; ſomewhat ſimilar to that of PACHA or BASHAW in Turkey.

PAISHAWUR, a city of Aſia, in Cabul, on the Kameh; 125 miles SE. of Cabul, and 170 N. of Moultan. Lon. 70. 36. E. Lat. 33. 18. N.

PAISHWAH. See PAISHAW.

(1.) PAISLEY, a town of Scotland in Renfrewſhire, about 6½ miles W. of Glaſgow, on the river White Cart, over which there are two ſtone bridges of two arches each, and one of 3. The town is very ancient; but was of much leſs conſequence formerly than at preſent. The name *Paiſley* is ſuppoſed to be derived from the Gaelic *Pais-lickt*, i. e. *the brow or face of a rock*, which was the ſituation of its old church in 1160. It was erected into a burgh of barony by James IV. in 1488, when its importance ſeems to have been derived from its rich monaſtery. Even in the beginning of the 18th century, it was but an inconſiderable place; conſiſting only of one ſtreet, about half a mile in length, with ſeveral lanes; whereas now, with its ſuburbs, it occupies ſuch an extent of ground, that it appears to be one of the largeſt and moſt populous towns in Scotland. Its buildings are elegant; its ſtreets are well paved; and where the river intervenes, connected with one another by three bridges. It is governed by 3 bailies, of which the eldeſt is commonly in the commiſſion of the peace, a treaſurer, a town-clerk, and 17 counſellors, who are annually elected about Michaelmas. It enjoys the powers of government and police, without the uſual burdens of royal boroughs. The freedom of the town is conferred on very moderate terms. The revenues are not great, but they are well managed. The old part of the town runs from E. to W. upon the S. ſlope of a ridge of hills, from which there is a fine proſpect of Glaſgow and the adjacent country; but on the S. the view terminates in a ridge of green hills, about two miles diſtant. It is fully a mile long, and nearly as broad. On the E. ſide of the Cart, ſtands the new town, which was ſome years ago feued off by the Earl of Abercorn, and now conſiſts of a number of handſome buildings. The ſtreets are laid off in a regular manner, but not in right angles. Many of them bear evidence of the induſtry of the people from their names, as *Silk-Street*, *Cotton Street*, *Lawn-Street*, &c. Here the earl of Abercorn has built one of the largeſt, moſt commodious, and moſt elegant inns in Scotland, and ſeveral market-places. The town of Paiſley continued a part of the Abbey pariſh till 1738; when the magiſtrates and council having purchaſed the patronage from the then earl of Dundonald, a new church was built, and the town was erected into a ſeparate pariſh. This is called the *Laigh Church*, is built in the form of a Greek croſs, very well laid out, and contains a great number of people. In 1756 another church was built, upon a very extended plan, in which, the moſt diſtant of the congregation can hear a good ſpeaker with eaſe. It is ornamented with a lofty ſpire viſible at a great diſtance. This is called the *High Church*, and is a very fine building; it is an oblong ſquare of 82 feet by 62, built of free-ſtone, with ruſtic corners and an elegant ſtone cornice. The roof is a pavilion covered with ſlate, having a platform covered with lead. In 1781, the *Middle Church* was built, and very elegantly finiſhed: and in 1782 the town was divided into 3 pariſhes, named from their churches. There are two large diſſenting congregations; thoſe of the Antiburgher perſuaſion and the Relief. There is alſo a ſmall congregation of Cameronians. The town-houſe is a very handſome building of cut ſtone, with a tall ſpire and a clock. The fleſh-market has a genteel front of cut ſtone, and is one of the moſt commodious in Britain. The poor's houſe is a large building, very well laid out, and ſtands oppoſite to the quay, in a fine free air. It is ſupported by a ſmall tax. The number of inhabitants in the town of Paiſley amounted in 1695 to 8200; in 1755 they were 4290; in 1782, 11,100; and in 1792 they were 13,800. At that period the total population of Paiſley, in town and country including the Abbey Pariſh, was 24,592; and the total increaſe 17,793, ſince 1755. Paiſley is now the firſt manufacturing town in Scotland, and is greatly celebrated on account of ſome of its branches. The manufactory of ſilk gauze, in this reſpect, firſt claims our notice. This branch is brought to the utmoſt perfection, and is wrought to an amazing variety of patterns. It has been computed, that there have been no leſs than 5000 weavers employed in Paiſley and in the country adjacent; and the number of winders, warpers, clippers, and others neceſſary in other parts of the ſilk-manufacture, has been likewiſe computed to be no leſs than 5000. Each loom will produce at an average, 70l. yearly; the whole will then be 350,000l. In 1784 the manufactures of Paiſley, in ſilk gauze, lawn and linen gauze, and white ſewing thread amounted to 579,185l. 16s. 6d; and no fewer than 26,484 perſons were employed in carrying them on. It is difficult to give an exact account of the ſtate of its manufactures at preſent. Beſides theſe principal manufactures, there are 4 conſiderable tan-works, 2 ſoap and candle works, a manufacture of ribbons, and another of inkle or tape. In 1789 the annual value of all the manufactures in Paiſley of every ſort amounted to 660,385l. 16s. In the various weaving branches there were employed at Whitſunday 1791, in the ſuburbs of Paiſley, 1108 looms, which, added to 2494 employed in the town, gives 3602 in all. Beſides about 150 in the country part of the pariſh, there are great numbers employed by them in the villages of Nielſtoun, Barhead, Beith, Dalry, Kilwinning, &c. &c. In 1744, when all the buſineſs was confined to the town and ſuburbs, there were 867 looms at work. The thread-making in Abbey pariſh employs 9 mills, which, added to 118 employed in Paiſley, make 127 in all. The number in 1744 was 93. But we are credibly informed that the cotton trade alone has been ſince carried on to a much greater extent than that above mentioned. The Cart runs from S. to N. and falls into the Clyde, after it has joined the conflux of the Gryfe and Black Cart at Inch-innan bridge, 3 miles

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miles below the town. At spring tides, vessels of 0 tons burden come up to the quay. The communication by water is of great importance to the inhabitants; for in this way they are frequently erved with fish of different kinds, and send their goods and manufactures to Port-Glasgow, Greenock, and Glasgow; and by the great canal they have also a communication with the Frith of Forth. Paisley has fairs in August and November, and lies 22 miles N. of Ayr. Lon. 4. 20. W. Lat. 55. 52. N.

(2.) PAISLEY, ABBEY PARISH OF, an extensive parish of Scotland, in Renfrewshire, formerly comprehending the town and suburbs of Paisley, (N° 1.) but disjoined from it in 1738, and now containing the whole country part of the ancient original parish. It is about 9 miles long from E. to W. and from half a mile to 3 broad. The surface is gently waving, often swelling near the town, into beautiful eminences, the greatest elevation of which is about 680 feet above flood-mark at Paisley. The surface is partly moss and heath, but the greater part is excellent pasture, and a considerable part is arable. The soil is in general thin, with a bottom of gravel, or till, very retentive of moisture. Along the banks of the rivers, and in the flat grounds, it is fertile, but thinner and more strong towards the S. The air is moist, in consequence of the prevailing SW. winds, and its effects appear in rheumatisms, quinseys, pneumonic ailments, &c. But upon the whole neither the town nor country adjacent can be called unhealthy. In 1765 dysentery raged with great violence but has since been scarcely complained of. Nervous fevers are neither very general nor uncommonly fatal. Intermittents, which, from the damp air, might be expected to be common, are not so much as known. The water is but indifferent: about 140 acres are under natural wood, oak, ash, birch, plane, &c. There are 5 coal mines. Free-stone, granite and lime-stone abound; and fossile marine shells are found in the lime quarries, as well as corals and shells in the coal mines. Among these are *orthoceratites, turbinated cochleæ*, several species of bivalves, and crystals of calcareous spar; with various figured stones, and vegetable petrefactions. Husbandry is much improved, and the usual crops produced. Servitudes are almost abolished. The population, in 1791, was 10,792; increase, since 1755, no less than 8,283. The ancient abbey church, which gives name to the parish, stands a short way S. of the inn of Paisley, and was the only one which Paisley formerly required. This church was anciently a most noble building, and consisted of several distinct and separate places of worship: the relics of this magnificent Gothic structure are worthy the notice of the antiquarian. Mr Pennant says, the great N. window is a noble ruin, the arch very lofty, the middle pillar wonderfully light, and still entire; only the chancel now remains, which is divided into a middle and two side-isles, all very lofty pillars, with Gothic arches; above these is another range of pillars much larger, being the segment of a circle, and above a row of arched niches from end to end, over which the roof ends in a sharp point. The outside of the building is decorated with a profusion of ornaments, especially the great W. and N. doors, than which scarce any thing lighter or richer can be imagined. Close by the Abbey church is the earl of Abercorn's burial-place. It is a vaulted Gothic chapel, without pulpit or pew, but has the finest *echo* perhaps in the world. In this chapel is the monument of Marjory Bruce, daughter of Robert Bruce, wife of Walter, great steward of Scotland, and mother of Robert II.; and in it were interred Elizabeth Muir and Euphemia Ross, consorts to Robert II. The abbey of Paisley was founded as a priory for monks of the order of Clugni, about 1160, by Walter, great steward of Scotland. It was afterwards raised to an abbacy; and its lands were by Robert II. erected into a regality, under an abbot. After the reformation, the abbacy was secularized by the Pope in favour of Lord Claud Hamilton, son of the Duke of Chatelherault: and, in 1588, it was erected into a temporal lordship, and Lord Claud was created Lord Paisley. Its revenues were very considerable; consisting of the tythes of 28 parishes, with the property of several lordships. But in 1653, Lord Claud's grandson, James earl of Abercorn, sold the lordship to the Earl of Angus, who in 1654 sold it to William Lord Cochran. Great part of it was since sold off by the family of Dundonald; and what remained was in 1764 repurchased by the late Earl of Abercorn. The fabric of the abbey owed much of its magnificence to Abbot George Schaw, who about 1484, enlarged and beautified the building, gardens, &c. The abbey was successively the seat of the Earls of Abercorn and Dundonald; but the late Earl of Dundonald demolished the ancient gateway; and, by feuing off the immediately adjoining grounds for building, entirely changed the appearance of the place; so that it is now in a ruinous state. The spinning of cotton was introduced into the Abbey parish in 1783. The principal seat of that manufactory is at Johnstoun, a neat and regularly built village about 3 miles W. from Paisley, upon the estate of Mr Houston of Johnstoun. The feuing of that village was begun in 1782; and it contained, at Whitsunday 1792, 293 families, or 1434 souls. There are five companies established in it for cotton spinning. Two of these carry on their principal operations by water-machinery. In the two mills employed in them, there were, in 1792, 22,572 spindles. The number of persons, young and old, then employed in both mills were 660, but the trade is since greatly increased. There is also in the neighbourhood of Paisley a calico printing work and a copperas work. The bleaching business in the Abbey parish is carried on to a very considerable extent. There are 10 fields for whitening muslins and lawns, and about as many for thread, almost wholly employed by the manufacturers in Paisley. About 300 persons are at work in this branch of business, of whom about 240 are women, who are hired for the season. A soap and candle manufacture pays about 2000l. of duty *per annum* to government, and has in some years paid upwards of 3000l. A black and hard soap manufacture, 4500l. *per annum*. The starch manufacture is but lately established. The distillery business is carried on to a great extent, and the spirit manufactured in great perfection. A considerable quantity of it is exported.

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(3.) PAISLEY, BLACK BOOK OF, in literary history, an ancient chronicle, often quoted in Scottish history, containing a record of public affairs and remarkable events, kept by the monks, who resided in the monastery. It agreed in every material fact, with the *Scoti-chronicon* of FORDUN.

PAITA, a sea-port of Peru, in the audience of Quito, consisting of about 200 houses, one story high. The walls are made of split cane and mud, and the roofs only a covering of leaves. Its only defence is a fort without either ditch or out-work; surrounded by a brick wall of little or no strength, on which are mounted 8 pieces of cannon. It has frequently been plundered by the buccaneers. Com. Anson got possession of its fort in 1741, and burnt the town, because the governor refused to ransom it. Lon. 81. 19. W. Lat. 6. 12. S.

PAIX, a town of Hispaniola, on the N. coast. It was built by the French, and has a pretty good harbour. Lon. 72. 55. W. Lat. 19. 58. N.

PAKA, a town of Bohemia, in Konigingratz, 7 miles ENE. of Gitschin.

PAKIR, or PECHER, a sea-port town of Arabia, in Oman. The people carry on a considerable trade with India, in cattle, grain, dates, raisins, and other fruits. It is 25 miles E. of Dofar, and 132 SW. of Hasek.

PAKUPZKI, a town of Croatia, on the Kulpa, 10 miles E. of Cairstadt.

PALA, *n. s.* a weight used in the E. Indies, containing 4 carshas. Each carsha is 80 RACTICAS, or seeds of the *Gunga Creeper*, which are 1 1/8 grains each.

(1.) * PALACE, *n. s.* [*palais*, Fr. *palatium*, Lat.] A royal house; an house eminently splendid.—

We, with our colours spread,
March'd thro' the city to the *palace* gates. *Shak.*

Palaces and pyramids do slope
Their heads to their foundations. *Macbeth.*

The *palace* yard is fill'd with floating tides. *Dryden.*

The sun's bright *palace* on high columns rais'd,
With burning gold and flaming jewels blaz'd. *Addison.*

The old man early rose, walk'd forth, and sate
On polish'd stone before his *palace* gate. *Pope.*

(2.) PALACE, PALATIUM, is a name generally given to the dwelling-houses of kings, princes, and other great personages; and taking different epithets, according to the qualifications of the inhabitants, as *imperial*, *royal*, *pontifical*, *cardinal*, *ducal*, *episcopal*, &c. Amongst the works of the ancient Egyptians, we have an account in the *Universal History*, of a most magnificent palace in Upper Egypt, near Aswan, the ancient Syene; the ruins whereof are as large as a little city.

(3.) PALACE COURT. See MARSHALSEA, § 2.

(1.) PALACIOS, a town of Spain, in Andalusia, 12 miles S. of Seville. Lon. 5. 24. W. Lat. 37. 20. N.

(2.) PALACIOS, a town of Spain, in Leon.

* PALACIOUS. *adj.* [from *palace*,] Royal; noble; magnificent.—London encreases daily, turning of great *palacious* houses into small tenements. *Graunt.*

PALACIUM, in ancient geography; 1. A town of the Thracian Chersonesus; 2. A village of Italy on Mount Palatine, where Rome was afterward built.

PALÆ, an ancient town of Corsica, now called *St Bonifacio*. See BONIFACIO, N° 2.

PALÆA, two ancient towns, in Cyprus and Cephalenia.

PALÆAPOLIS, an island on the coast of Spain. *Strabo.*

(1.) PALEMON. See MELICERTA.

(2.) PALÆMON, Q. Rhemnius, a famous grammarian of Rome, in the reign of Tiberius. He was born of a slave at Vienna, and was first bred up a weaver: but attending his master's son to school, he acquired so much learning, that he obtained his freedom and became a teacher at Rome. He had an excellent memory, and ready elocution, and could make verses extempore. But his arrogance and his debaucheries were so great, that his large income was not sufficient to support them. We have only some fragments of his works.

PALÆOLOGUS, Michael, a very able man, who was governor of Asia under the emperor Theodorus Lascaris; and who, by various stratagems and cruelties, procured the empire for himself and his posterity. See CONSTANTINOPLE, § 2.

PALÆPAPHOS, a town of Cyprus, where stood a temple of Venus; and an adjoining town called *Nea Paphos*; where St Paul struck Elymas blind, and converted the proconsul Sergius Paulus. *St Luke*, *Strabo*, *Virgil*, *Pliny*.

PALÆPHARSALUS, the ancient town of PHARSALUS, in Thessaly. *Cæsar.*

(1.) PALÆPHATUS, an ancient Greek philosopher, who flourished between the times of Aristotle and Augustus, but whose precise age is uncertain. He wrote 5 books *De incredibilibus*, of which the first only is extant. In it he attempts to explain the fables of mythology by historical facts. The best edition is that of J. Fred. Fischer; 8vo. Leipsic. 1773.

(2, 3.) PALÆPHATUS, a historian of Egypt: and a poet of Athens, who wrote a poem on the Creation.

PALÆPOLIS, an ancient town of Italy, in Campania, built by a Grecian colony, on the spot where NAPLES was afterwards erected.

PALÆSTE, a town of Epirus, near Oricus, where Cæsar first landed with his fleet. *Lucan*, v. 460.

PALÆSTINA. See PALESTINE.

PALÆSTRA, in Grecian antiquity, a public building where the youth exercised themselves in wrestling, running, playing at quoits, &c. To prevent the combatants from hurting themselves by falling, the bottom of the palæstra was covered with dust or gravel. Some suppose the palæstra to have been only a part of the GYMNASIUM. Others imagine that it was of two kinds; the one for the exercise of the body, the other for the cultivation of the mind: but the derivation of the word seems to confine it to bodily exercise. See PANCRATIUM and PENTATHLUM.

PALÆSTRICE, in the ancient GYMNASICK, comprised all exercises under the denomination PALÆSTRÆ; as wrestling, boxing, pancratia, hoplomachia, running, leaping, throwing the discus,

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cus, the exercise of the javelin, and that of the hoop, denominated by the Greeks τροχος; which consisted in rolling an iron hoop five or six feet in diameter, beset with iron rings, the noise of which apprising the people to give way, afforded them also an amusement. Both strength and skill were requisite in directing this hoop, which was driven with an iron rod. To these must also be added the exercises belonging to the medicinal gymnastics; as, 1. Walking. 2. Vociferation, or shouting. 3. Holding one's breath. Hoffman enumerates no fewer than 55 sorts of exercises that were practised in the gymnasia.

PALÆSTROPHYLAX, the director of the PALÆSTRA, and the exercises performed there.

PALÆTYRUS, the ancient city of Tyre, on the continent. See TYRE.

PALAFORGEL, a town of Spain, in Catalonia, 20 miles SE. of Gerona.

PALAFOX, John, a learned Spaniard, born at Arragon, in 1600. He studied at Salamanca; and was a member of council of the Indies; bishop of Angelopolis, and of Osma, and judge of the Indies. He wrote on various subjects, and died in 1659.

(1.) PALAIS, a town of France, the capital of Belle-isle, in the department of Morbihan. See BELLE-ISLE, N° 1. It has 2 churches and 500 houses. Lon. 3. 2. W. Lat. 47. 18.

(2.) PALAIS, St, a town and district of France, in the dep. of the Lower Pyrenees; which, with the town and district of St John Pied de Port, forms nearly the whole of the ci-devant province of Lower Navarre. (See NAVARRE, N° 2.) It is seated on the Bidouse, 15 miles SE. of Bayonne. Lon. 1. 4. W. Lat. 43. 21. N.

PALAISEAUX, a town of France, in the dep. of the Seine and Oise, 7½ miles SE. of Versailles.

(1.) PALAMBANG, or } a town of the East In-
(1.) PALAMBOANG, } dies, in the island of Java, capital of a kingdom; seated at the E. end of the island, on the straits of Bally, and separated from the island of Bally by a narrow channel. Lon. 115. 10. E. Lat. 7. 10. S.

(2.) PALAMBOANG. See BALAMBUAN.

PALAMCOTTA, or TINEVELLY, a town of Indostan, in the Carnatic, and prov. of Tinevelly; 74 miles SSW. of Madura, 148 SSE. of Coimbettore, and 401 SW. by S. of Madras. Lon. 77. 54. E. Lat. 8. 43. N.

PALAMEDEA, in ornithology, a genus belonging to the order of grallæ. The character of this genus, according to Latham, is, the bill bends down at the point, with a horn, or with a tuft of feathers erect near the base of it; the nostrils are oval; the toes are divided almost to their origin, with a small membrane between the bottoms of each. There are two species:

1. PALAMEDEA CORNUTA, the *horned screamer*. It is about the size of a turkey; in length about 3 feet 4 inches. The bill is two inches and a quarter long, and black; the upper mandible is a little gibbous at the base, the under shuts beneath it as in the gallinaceous tribe: the nostrils are oval and pervious, and placed near the middle of the bill. From the crown of the head springs a slender horn of more than three inches in length, and pointed at the end; the irides are the colour of gold; the plumage on the head, neck, and upper part of the body is black, margined with grey on the first, and downy; some of the feathers round the neck are likewise edged with the same: the under parts of the wings are pale rufous, appearing on the shoulders and edges of them when closed; at the bend of the wing are two strong, sharp, horny, yellow spurs, one above another, the uppermost an inch and a half in length; the belly, thighs, and vent, are white; the tail is 8½ inches long; the legs are stout and dusky; the fore claws are moderately bent; the hind one is nearly straight, not unlike that of a lark, and is about an inch long. The female is very like the male. See *Plate* 263. They are always met with in pairs; and if one dies, the other mourns to death for the loss. They frequent places near the water; make a large nest of mud, in the shape of an oven, upon the ground; and lay two eggs, the size of those of a goose. Bajon says they make nests in thickets, and among rushes. Fermyn says they build in high trees. The young are brought up in the nest till able to shift for themselves. They have but one nest in the year, which is in Jan. or Feb. except the first eggs are taken away, when they make a 2d in April or May. The young birds are frequently eaten by the natives, though the colour of the flesh is very dark; that of the old ones is tough and ill-tasted. This species is said to feed on crabs and birds, as pigeons and poultry, and even to attack sheep and goats; but others say its principal food is reptiles. In the stomach of one which M. Bajon dissected, there were only found herbs and seeds of plants; however, he adds, that the bird has no gizzard. This species is rare. It is found in Cayenne, Guiana, Surinam, and other parts of America, chiefly in the marshes and wet savannas, and for the most part near the sea. These seem to be the birds mentioned by Ulloa, called by the inhabitants of Quito *dispertadores*, or *awakeners*, from their giving notice to others of the approach of danger: as on hearing the least noise, or seeing any one, though at a great distance, they rise from the ground, and make a loud chattering like a magpie, continuing the noise, and hovering over the object which caused the alarm, whereby the rest of the birds, taking the hint, are able in time to escape the impending danger. This screaming noise, which some authors relate as being exceedingly loud and terrible, has occasioned Mr Pennant to give the genus the name annexed to it. In Dr Hunter's museum there is a fine specimen of this bird, brought from Cayenne.

2. PALAMEDEA CRISTATA, the *crested screamer*. This bird is about the size of an heron; the bill is short, bent like that of a bird of prey, and of a yellowish brown: the irides are gold-coloured: on the forehead, just above the bill, is a tuft of black feathers, variegated with ash-colour: the head, neck, and body, are grey, mixed with rufous and brown, most inclining to the last on the wings and tail: the wings are not furnished with spurs: the legs pretty long, of a dull yellow: claws brown: the hind toe placed high up, so as not to touch the ground in walking. This species inhabits Brasil. Linnæus makes it to belong to the screamer genus, perhaps from its cry; for it is said

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ſaid to be heard at a great diſtance, and is not unlike that of a hen turkey. None of our later writers ſeem to have ſeen it, all of them relying on Marcgrave both for deſcription and figure. It is ſaid to feed on the ſame food as the heron tribe; the fleſh is good, and the bird by ſome kept tame.

PALAMEDES, a Greek chief, ſon of Nauplius king of Eubœa, by Clymene. He was ſent by the Grecian princes who were going to the Trojan war to bring Ulyſſes to the camp, and prevailed; but at the expenſe of the inveterate hatred of the latter, who was mean enough to forge a letter, which had the effect to make him be conſidered guilty of treachery; and he was accordingly ſtoned to death. Homer is ſilent about the fate of Palamedes; and Pauſanias mentions, that it had been reported by ſome that Ulyſſes and Diomedes had drowned him in the ſea as he was fiſhing on the coaſt. Philoſtratus adds, that Achilles and Ajax buried his body with great pomp on the ſea-ſhore, and that they raiſed upon it a ſmall chapel, where ſacrifices were regularly offered by the inhabitants of Troas. Palamedes was a man of learning as well as a ſoldier; and according to ſome he completed the alphabet of Cadmus, by the addition of the four letters θ, ξ, χ, φ, during the Trojan war. To him alſo is attributed the invention of dice and backgammon; and it is ſaid that he was the firſt who regularly ranged an army in a line of battle, and who placed centinels round the camp, and excited their vigilance and attention by giving them a watchword. He is alſo famed for his ſkill in phyſic. See MEDICINE, *Index*.

PALAMIDA, a town of Sicily, in Mazara.

PALAMOS, a ſtrong ſea-port town of Spain, in Catalonia, on the Mediteranean, 47 miles NE. of Barcelona. The French took it in 1694. Lon. 2. 58. E. Lat. 41. 58. N.

PALAMOW, a town of Indoſtan, in Bahar.

(1.) PALANKA, a fortified town of Hungary, on the Ibola, 37 miles N. of Buda. Lon. 18. 23. E. Lat. 48. 9. N.

(2, 3.) PALANKA, two towns of European Turkey: 1. in Beſſarabia, on the Dneiſter, 28 miles SE. of Akerman: 2. in Bulgaria, 40 miles S. of Sophia.

* PALANQUIN. *n. ſ.* Is a kind of covered carriage uſed in the eaſtern countries, that is ſupported on the ſhoulders of ſlaves, and wherein perſons of diſtinction are carried.

PALANTIUM. (*Livy.*) See PALATIUM, N° 2.

PALANTIA, a town of Spain. *Mela*, ii. 6.

PALANTIUM, an ancient town of Arcadia.

PALANZA, a town of Italy, in the department of the Agogna, and late duchy of Milan; on the W. bank of Lake Maggiore; 15 miles SE. of Domo d'Oſſola.

PALAOS. See PHILIPPINES, N° 2.

PALAPOLI, a town of Natolia, on the coaſt of Caramania, with a Greek archbiſhop's ſee. Lon. 33. 26. E. Lat. 36. 52. N.

PALAPRAT, John, a French poet, born at Thouloufe, in 1650. He wrote a collection of poems, and ſeveral dramatic pieces.

PALARIA, among the Romans, a kind of exerciſe performed at a ſtake by the ſoldiers. The ſtake being fixed in the ground, and ſix feet high above it, the young undiſciplined ſoldiers advanced againſt it, armed with a hurdle and cudgel, inſtead of a ſword and ſhield, and went through all the rules of attack and defence, as if actually engaged with an adverſary. Sometimes they ſtood at a diſtance, and attacked with miſſive weapons; at the ſame time uſing all the requiſite motions for defending themſelves, and warding off what might be thrown againſt them.

PALASCO, a town of France, in the iſland and dep of Corſica, 14 miles N. of Corte.

* PALATABLE. *adj.* [from *palate*.] Guſtful; pleaſing to the taſte.—How many devices have been made uſe of to render this bitter potion *palatable*? *Addiſon.*—

They by th' alluring odour drawn in haſte,
Fly to the dulcet cates, and crowding ſip
Their *palatable* bane. *Philips.*

(1.) * PALATE. *n. ſ.* [*palatum*, Latin.] 1. The inſtrument of taſte, the upper part or roof of the mouth.

Let their *palates*
Be ſeaſon'd with ſuch viands. *Merch. of Venice.*
—Without theſe their greateſt dainties could not reliſh to their *palates*. *Hakewill on Prov.*—Light and colours come in only by the eyes; all kind of ſounds only by the ears; the ſeveral taſtes and ſmells by the noſe and *palate*. *Locke.*—

By nerves about our *palate* plac'd,
She likewiſe judges of the taſte. *Prior.*

Hard talk to hit the *palate* of ſuch gueſts! *Pope.* 3. Mental reliſh; intellectual taſte.—It may be the *palate* of the ſoul is indiſpoſed by liſtleſſneſs or ſorrow. *Taylor.*—The men of nice *palates* could not reliſh Ariſtotle. *Baker.*

(2.) *The* PALATE, in anatomy, is the fleſh that compoſes the roof, or the upper and inner part of the mouth. It has much the ſame ſtructure with the gums; but it has a great number of glands, diſcovered ſo early as the time of Fallopius: theſe are principally ſituated in the hinder part near the uvula, where it is pendulous, in the manner of a curtain, which part is called *velum*, or *clauſtrum palati*. The glands ſituated particularly in this part, ſecrete a mucous fluid, ſerving to lubricate the mouth and throat, and to facilitate deglutition; they have a great number of apertures for the diſcharge of this humour into the mouth. The great uſes of this membrane are to defend the bones of the palate from corrupting; and for preventing, by its clauſtrum or velum, the things to be ſwallowed from getting up into the noſtrils.

PALATI, a Latin hiſtorian of Venice, who flouriſhed in the 17th century. His chief work is, *Monarchia Occidentalis, ſive Aquila Interlilia, et Aquila Saxonica*.

* PALATICK. *adj.* [from *palate*.] Belonging to the palate; or roof of the mouth.—The three labials, P. M. B. are parallel to the three gingival T. D. N. and to the three *palatic* K. G. L. *Holder.*

(1.) * PALATINATE. *n. ſ.* [*palatinatus*, Lat.] The county wherein is the ſeat of a count palatine, or chief officer in the court of an emperor, or ſovereign prince.

(2.) *A* PALATINATE is otherwiſe defined, a province or ſignory, poſſeſſed by a palatine.

(3.) PALATINATE OF THE RHINE, a ci-devant province of Germany, divided into two parts by the Rhine, called the *Upper* and *Lower Palatinate*.

Authors

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Authors are divided about the origin of the name *Palatines* or PSALZGRAVES, as the Germans call them; but it seems most likely to be derived from the *palatia*, or palaces, which the old Frankish and German kings, and Roman emperors were possessed of in different parts of the country, and over which they appointed supreme stewards or judges, who were called *Palatines* or *Pfalzgraves*. The countries where these Palatines kept their courts, were, from them, called *Palatinates*; which name came at last to be appropriated, by way of eminence, to this country, as being the most considerable of them.

I. PALATINATE, LOWER, before the late revolutions belonged to the elector Palatine. It was bounded on the E. by the county of Katzenellnbogen, the archbishopric of Mentz, the bishopric of Worms, and part of the territory of the Teutonic order in Franconia; W. by Alsace, the late duchy of Deuxponts, the ci-devant county of Sponheim, the duchy of Simmern, and certain districts of the late electorate of Mentz; S. by the duchy of Wurtemberg, and the late bishopric of Spire; and N. by a part of the late archbishopric of Mentz and the county of Katzenellnbogen. It contained 41 towns, besides several boroughs; and is about 100 miles long, and 70 broad. The air is healthful, and the soil fruitful in corn, pasturage, wine, tobacco, and all sorts of pulse and fruits, particularly walnuts, chesnuts, and almonds. This country also breeds abundance of cattle, and is well watered by the Neckar, the Nahe, and the Rhine. In the last of these, near Germersheim and Selz, is found gold; the exclusive right of searching for which was farmed out by the elector. The state of religion hath varied greatly since the Reformation, Lutheranism and Calvinism having been uppermost by turns, till the electorate devolved to the popish branches of the family, when popery, with all its superstition and mummery, was established anew; though most of the natives are still Protestants. The Lutherans are about 50,000, and have about 85 churches. The number of Calvinist clergy here, is estimated at 500, and that of the Roman Catholics at 400. Besides schools and Jesuits colleges in this country, there is one university, namely, that of Heidelberg; but there is very little trade in it except in wine. In general, the Lower Palatinate has suffered more by the preceding wars with France, than all the provinces of Germany put together during the space of 30 years; for the French have plundered the country, and demolished some of its first towns more than once. In the modern part of the Universal History, we have the following account of the rise of the Palatinate of the Rhine, under the history of Germany. "Though Conrad the son of Everhard inherited from his father the duchy of Franconia, with the counties of Hesse and Alsace, he could not succeed him in the dignity of count-palatine, because Otho had taken it from his father, and conferred it on Herman, third son of Arnold duke of Bavaria: but as this honour was unattended with any solid advantage, the emperor began to annex it to the lands and castles situated on the Rhine, whence he acquired the title of Count Palatine of the Rhine: and, in process of time, these counts made great acquisitions by marriages, purchases, mortgages, and imperial donations, so as to form a very considerable province." The powers of counts-palatine in the German empire have always been ample. When the counts-palatine of the Rhine began to execute their office, they neither possessed on that river, lands, cities, nor castles; but having by degrees, made great acquisitions by marriages, purchases, agreements, imperial donations, or otherwise, they at length formed a very considerable principality. We are told, that under the emperors of the house of Suabia, their authority and power increased greatly, though it was a gradual increase. Under the reign of the emperor Henry IV. the credit of the counts-palatine was very considerable at the court; and by the German law, the count-palatine of the Rhine enjoyed not only during the absence of the emperor, but likewise during a vacancy of the empire, the right of the ban beyond the Rhine, till within a mile of the city of Metz, and as far as the ocean, as well as in Flanders. However, this right of the ban has not been granted to him by the emperors. There is likewise an ancient ordonnance, which imports, that the count palatine is always, by right, the representative or lieutenant of the kingdom. Nevertheless, the emperors still reserved to themselves the right of establishing vicars." This country suffered much during the late war, being alternately and repeatedly over-run by the French, British, and Austrian troops, in 1794, and 1795. All that part of it which lies on the left or west bank of the Rhine, was conquered by the French, annexed to the republic in 1796, and included in the department of the RHINE AND MOSELLE. See REVOLUTION.

II. PALATINATE, UPPER, lies in the circle of Bavaria, and belongs to the elector thereof. It is bounded on the W. and NW. by Franconia; E. and NE. by Bohemia; and S. by Newburg and Lower Bavaria. In the 12th century it belonged to the dukes of Suabia. It was afterwards annexed to the Palatinate. In 1354, it was mostly sold to Bohemia; but in 1714, it was ceded to the elector of Bavaria. See BAVARIA, § 6. AMBERG is the capital.

(4.) PALATINATES OF POLAND. Previous to the Revolution in this unfortunate country, it was divided into palatinates. A Polish palatine is thus described in the Universal History: "A palatine may be regarded as the governor of a province, who levies and leads the troops of his own jurisdiction to join the army of the republic. His civil power is likewise considerable, as he presides at the assemblies of his palatinate, rates the prices of all commodities and merchandise in the province, regulates the weights and measures, and judges and defends the Jews within his jurisdiction. This part of his function is particularly specified, that a set of men the most useful and industrious in Poland may not be oppressed; the king being likewise obliged, by his oath, to afford them the protection of the laws and his sovereignty. Under him is appointed a substitute or vice-palatine, who takes an oath to his superior, and must be possessed of a land estate to a certain value."

(1.) *PALATINE. *n. s.* [*palatin*, Fr. from *palatinus*

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latius of *palatium*, Lat.] One invested with regal rights and prerogatives.—These absolute *palatines*, made barons and knights, did exercise high justice in all points, within their territories. *Davies.*

(2.) *PALATINE, *adj.* Possessing royal privileges.—Many of those lords, to whom our kings had granted those petty kingdoms, did exercise *jura regalia*, insomuch as there were no less than eight counties *palatine* in Ireland at one time. *Davies.*

(3.) PALATINE, or COUNT PALATINE, was a title presently given to all persons who had any office or employment in the prince's palace: but afterwards conferred on those delegated by princes to hold courts of justice in the provinces; and on such among the lords as had a palace, that is, a court of justice in their own houses.

(4.) PALATINE COUNTIES IN ENGLAND.—Chester, Durham, and Lancaster, are called *Counties palatine*. The two former are such by prescription, or immemorial custom; or, at least as old as the Norman conquest: the latter was created by king Edward III. in favour of Henry Plantagenet, first earl, and then duke of Lancaster; whose heiress being married to John of Gaunt, the king's son, the franchise was greatly enlarged and confirmed in Parliament, to honour John of Gaunt himself, whom, on the death of his father-in-law, the king had also created duke of Lancaster. Counties palatine are so called *a palatio*; because the owners thereof, the earl of Chester, the bishop of Durham, and the duke of Lancaster, had in those counties *jura regalia*, as fully as the king hath in his *palace*; *regalem potestatem in omnibus*, as Bracton expresses it. They might pardon treasons, murders, and felonies; they appointed all judges and justices of the peace; all writs and indictments ran in their names, as in other counties in the king's; and all offences were said to be done against *their* peace, and not, as in other places, *contra pacem domini regis*. And indeed, by the ancient law, in all peculiar jurisdictions, offences were said to be done against his peace in whose court they were tried; in a court-leet, *contra pacem domini*; in the court of a corporation, *contra pacem balivorum*; in the sheriff's court or tourn, *contra pacem vice-comitis*. These palatine privileges (so similar to the regal independent jurisdictions, usurped by the great barons on the continent, during the weak and infant state of the first feudal kingdoms in Europe) were in all probability originally granted to the counties of Chester and Durham, because they bordered upon enemies countries, Wales and Scotland: in order that the owners, being encouraged by so large an authority, might be the more watchful in its defence; and that the inhabitants, having justice administered at home, might not be obliged to go out of the county, and leave it open to the enemy's incursions. And upon this account also, there were formerly two other counties palatine, Pembrokeshire and Hexamshire, the latter now united with Northumberland: but these were abolished by parliament, the former in 27 Hen. VIII. the latter in 14 Eliz. And in 27 Hen. VIII. likewise, the powers before mentioned of owners of counties palatine, were abridged; the reason for their continuance in a manner ceasing: though still all writs are witnessed in their names, and all forfeitures for treason by the common law accrue to them. Of these three, the county of Durham is now the only one remaining in the hands of a subject. For the earldom of Chester, as Camden testifies, was united to the crown by Henry III. and the title has ever since been given to the king's eldest son. And the county palatine or duchy of Lancaster, was the property of Henry of Bolingbroke, the son of John of Gaunt, at the time when he wrested the crown from King Richard II. and assumed the title of Hen. IV. But he was too prudent to suffer this to be united to the crown; lest, if he lost one, he should lose the other also. For, as Plowden and Sir Edward Cocke observe, "he knew he had the duchy of Lancaster by sure and indefeasible title, but that his title to the crown was not so assured: for that after the decease of Richard II. the right of the crown was in the heir of Lionel duke of Clarence, second son of Edward III.; John of Gaunt, father to this Henry IV. being but the fourth son." And therefore he procured an act of parliament, in the first year of his reign, ordaining that the duchy of Lancaster, and all other hereditary estates, with all their royalties and franchises, should remain, to him and his heirs for ever; and should remain, descend, be administered, and governed, in like manner as if he never had attained the regal dignity: and thus they descended to his son and grandson, Henry V. and Henry VI.; many new territories and privileges being annexed to the duchy by the former. Henry VI. being attainted in 1 Edward IV. this duchy was declared in parliament to have become forfeited to the crown, and at the same time, an act was made to incorporate the duchy of Lancaster, to continue the county palatine (which might otherwise have determined by the attainder), and to make the same parcel of the duchy; and, farther, to vest the whole in king Edward IV. and his heirs, kings of England for ever; but under a separate guiding and governance from the other inheritances of the crown. And in 1 Hen. VII. another act was made, to resume such part of the duchy lands as had been dismembered from it in the reign of Edward IV. and to vest the inheritance of the whole in the king and his heirs for ever, as amply and largely, and in like manner, form, and condition, separate from the crown of England and possession of the same, as the three Henrys and Edward IV. or any of them, had and held the same. The Isle of Ely is not a county palatine, though sometimes erroneously called so, but only a royal franchise: See COUNTY, § 5.

(5.) PALATINE GAMES, in Roman antiquities, games instituted in honour of Augustus by his widow Livia, after he had been enrolled among the gods. They were celebrated in the palace, whence the name, and were confirmed by the succeeding emperors. Some authors say that these games were instituted in honour of Julius Cæsar, and others again, confound them with the Ludi Augustales; but neither of these opinions seems to be well supported. See AUGUSTALES, § 2.

(6.) PALATINE, MOUNT. See PALATINUS, N° 2.

(7.) PALATINE TOWN, a town of Ireland, in Carlow, Leinster; so named from a colony of industrious Germans, who were driven from the Palatinate during the persecutions of Lewis XIV.

(8.) PALATINE TOWN, a township of New York, in

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in Montgomery county, on the N. banks of the Mohawk. In 1790 it contained 3212 citizens and 192 slaves, and in 1796 it had 585 electors. It has a Dutch church, and is 36 miles above Schenectady.

(9.) PALATINE TOWN, a town of New York, on the E. bank of Hudson's river, and N. side of Livingston's river; 11 miles N. of Rhynbeck.

PALATINI, an ancient people of Italy, who inhabited Mount Palatine.

(1.) PALATINUS, a surname of Apollo, from his being worshipped on Mount Palatine.

(2.) PALATINUS MONS, or PALATIUM, the first mountain of Rome, occupied by Romulus, and where he fixed his residence and kept his court, as did Tullus Hostilius, Augustus, and all the succeeding emperors; and hence the residence of princes is called *palatium*. The reason of the name is variously assigned; some say it is derived from the goddess PALES, or from the PALATINI, who originally inhabited the place, or from *balare*, or *palare*, the bleatings of sheep, which were frequent there; or from the word *palantes*, wandering, because Evander, when he came to settle in Italy, gathered all the inhabitants, and made them all one society. On the east it has mount Cœlius, on the south the Aventine, on the west the Capitoline, and on the north the Forum. Augustus built a temple to Apollo, on this mount, adorned with porticoes and a library, valuable for the various collections of Greek and Latin MSS. which it contained.

(1.) PALATIUM, in ancient geography, a town of Italy, in the territory of Reate, 25 stadia from the town. Dionysius Halicarnasseus reckons it one of the first towns of the Aborigines; and from it Varro accounts for the name of the *Mons Palatinus*; namely, that a colony from Palatium settled there.

(2.) PALATIUM, a town of Arcadia, which concurred to form MEGALOPOLIS, so called by Pliny; but called PALLANTIUM by Pausanias; PALANTEUM by Livy; and PALLANTEUM by Solinus; which last is the true orthography, as it was named from PALLAS, the great grandfather of Evander. Virgil and Pliny say the PALATINE Mount was named from it.

(3.) PALATIUM DIOCLETIANI, the villa of Diocletian, a town of Italy, near Salonæ, where he died, (*Eusebius*); afterwards called SPALATUM; which rose to a considerable city from the ruins of Salonæ, situated in Dalmatia on the Adriatic; now called SPALATTO, or SPALATRO.

(4.) PALATIUM LUCULLI (*Plutarch*), or VILLA LUCULLI; a town of Italy between Milenum and Baiæ in Campania, of wonderful structure. Now in ruins, and called PISCINA MIRABILE.

PALATO-PHARYNGÆUS, } or SALPINGO-PHA-
PALATO-SALPINGÆUS, } RYNGÆUS. See ANATOMY, § 202.

PALATSA, a town of Asiatic Turkey, in Natolia; 8 miles N. of Miletus.

PALAVAI, a town of Ceylon; 48 miles WNW. of Candi.

PALAZINA, a town of Italy, in the department of the Mincio, district and late duchy of Mantua, on the left bank of the Mincio, over which it has a bridge, leading to Merlengo and Goito.

PALAZOLLO, a town in Friuli; 14 miles SW. of Palma Nuovo.

PALAZZO, a town of France, in the department of the Doria, and late Piedmontese and county of Canavese, five miles E. of Ivrea.

(1.) PALAZOLLO, a late quadra or district of Italy, in the department of the Mella, and district of Brescia (ci-devant Brescian), containing 10 parishes and 8000 citizens, on the banks of the Oglio.

(2.) PALAZOLLO, a town of Italy, in the department of Mella, capital of the above territory, on the banks of the Oglio, and road to Bergamo; 15 miles W. of Brescia.

(1.) PALAZZUOLO, a town of Sicily, in the valley of Noto; 20 miles W. of Syracuse.

(2.) PALAZZUOLO. See PALAZZOLO, N° 1. and 2.

PALDIE, or } a village of Scotland, in Kin-
PALDIE-KIRK, } cardineshire, and parish of Fordoun, so named from St Palladius, who was interred in it; famous for its annual fair, held for three days, beginning on the first Tuesday after July 11th.

(1.) * PALE. *adj.* [*pale*, Fr. *pallidus*, Lat.] 1. Not ruddy; not fresh of colour; wan; white of look.—

Look I so *pale*, lord Dorset, as the rest? *Shak.*

We the hope drunk
Wherein you dress yourself; hath it slept since?
And wakes it now to look so green and *pale*? *Shak.*

2. Not high-coloured; approaching to colourless transparency.—When the urine turns *pale*, the patient is in danger. *Arbuthnot.* 3. Not bright; not shining; faint of lustre; dim.—

The night, methinks, is but the day-light sick;
It looks a little *paler*. *Shak.*

(2.) * PALE. *n. s.* [*palus*, Latin.] 1. Narrow piece of wood joined above and below to a rail, to inclose grounds.—

Get up o' th' rail; I'll peck you o'er the *pales* else. *Shak.*

As their example still prevails,
She tempts the stream, or leaps the *pales*. *Prior.*

—Deer creep through when a *pale* tumbles down. *Mortimer.* 2. Any inclosure.—A ceremony, which was then judged very convenient for the whole church, even by the whole, those few excepted, which brake out of the common *pale*. *Hooker.*—

Let my due feet never fail
To walk the studious cloister's *pale*. *Milton.*

—Born within the *pale* of the church, and so brought up in the Christian religion. *Duty of Man.* He hath proposed a standing revelation, so well confirmed by miracles, that it should be needless to recur to them for the conviction of any man born within the *pale* of Christianity. *Atterbury.*—

Confine the thoughts to exercise the breath;
And keep them in the *pale* of words till death. *Dunciad.*

3. Any district or territory.—There is no part but the bare English *pale*, in which the Irish have not the greatest footing. *Spenser.*—Divers noblemen of that religion, within the *pale*. *Clarendon.* 4. The

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pale is the third and middle part of the ſcutcheon. *Peacham.*

(3.) PALE. See EMPALEMENT.

(4.) PALE. (§ 2. *def.* 4). See HERALDRY, *Ch.* III. *Sect* 1. § 2.

(1) * *To* PALE. *v. a.* [from the adjective.] To make pale.—

The glow-worm ſhews the matin to be near,
And 'gins to *pale* his ineffectual fire. *Shak.*

To teach it good and ill, diſgrace or fame,
Pale it with rage, or redden it with ſhame.
Prior.

(2.) * *To* PALE. *v. a.* [from the noun.] 1. To incloſe with pales.—The diameter of the hill of 20 feet may be *paled* in with 20 deals of a foot broad. *Mortimer.* 2. To incloſe; to encompaſs.

Whate'er the ocean *pales*, or ſky inclips,
Is thine. *Shak.*

The Engliſh beech
Pales in the flood with men, with wives and boys. *Shak.*

Will you *pale* your head in Henry's glory,
And rob his temples of the diadem? *Shak.*

PALEARIUS, Aonius, a man of great probity, and one of the beſt writers of the 16th century. He was profeſſor of polite literature at Sienna, and afterwards ſettled at Lucca. Finally, he removed to Milan; where he was ſeized, carried to Rome, and burnt in 1566, for having ſpoken in favour of the Lutherans, and againſt the inquiſition. He wrote ſeveral pieces in verſe and proſe, of which a poem on the immortality of the ſoul is moſt eſteemed.

* PALE-EYED. *adj.* [*pale* and *eye.*] Having eyes dimmed.—

No nightly trance, or breathed ſpell,
Inſpires the *pale-eyed* prieſt. *Milton.*

Shrines, where their vigils *pale-eyed* virgins keep,
And pitying ſaints, whoſe ſtatues learn to weep.
Pope.

* PALEFACED. *adj.* [*pale* and *face.*] Having the face wan.—

Frighting her *palefaced* villages with war. *Shak.*

Let *palefaced* fear keep with the mean born man,
And find no harbour in a royal heart. *Shak.*

PALEIS, a town of Cephalenia. *Paus.* vi. 15.

* PALELY. *adv.* [from *pale.*] Wanly; not freſhly; not ruddily.

PALENCIA, a town of Spain, in Leon, with a rich archbiſhop's ſee. It had an univerſity, but it was removed to Salamanca. It is ſeated in a fertile ſoil on the river Carion on the frontiers of Caſtile, in Lon. 4. 42. W. Lat. 42. 10. N.

* PALENDAR. *n. ſ.* A kind of coaſting veſſel. Obſolete.—Solyman ſent over light horſemen in great *palendars*, which, running all along the ſea-coaſt, carried off the people and the cattle. *Knolles.*

* PALENESS. *n. ſ.* [from *pale.*] 1. Wanneſs; want of colour; want of freſhneſs; ſickly whiteneſs of look.—Her blood durſt not yet come to her face, to take away the name of *paleneſs* from her moſt pure whiteneſs. *Sidney.*—

The blood the virgin's cheek forſook;
A livid *paleneſs* ſpreads o'er all her look. *Pope.*

2. Want of colour; want of luſtre.—

The *paleneſs* of this flower
Bewrayed the faintneſs of my maſter's heart.
Shak.

PALENO, a town of Naples, in Abruzzo Citra; 9 miles E. of Solmona, and 16 SW. of Langiano.

PALENSEN, a town of Lower Saxony, in Calenberg; ſix miles S. of Hanover.

PALENZUCLA, a town of Spain, in Old Caſtile; 25 miles SW. of Burgos.

(1.) PALEO-CASTRO, a town of Lemnos, on the N. coaſt. Lon. 42. 55. E. Ferro. Lat. 40. 0. N.

(2.) PALEO CASTRO. See POLICASTRO.

* PALEOUS. *adj.* [*palea*, Latin.] Huſky; chaffy.—This attraction we tried in ſtraws and *paleous* bodies. *Brown.*

PALEPARTO, a town of Naples, in Calabria Ultra; 10 miles S. of Roſano.

PALEPOLI, a town of Aſiatic Turkey, in Caramania, on the S. coaſt; 120 miles S. of Cogni.

PALERMO, a city of Sicily, in Mazara, with an archbiſhop's ſee and a large harbour. This city, which is the capital of Sicily, is of great antiquity; and if a conjecture may be formed from its ancient name PANORMUS, which ſignifies an univerſal harbour, it was formerly in a very flouriſhing condition. By whom it was founded is uncertain, nor have we any authentic accounts of its inhabitants till it became a colony of the Phœnicians; after which it paſſed into the hands of the various nations that became maſters of this iſland. It has two harbours; in the one, which is very large, and in which there is a mole 1300 paces in length, ſhips lie at anchor; in the other their cargoes are laden and unladen. Both the harbours open to the W. There is alſo a ſuperb quay which extends a mile from W. to E. in a rectilinear direction, and is called *La Marina*. The bay of Palermo forms a large amphitheatre, with the city in the centre; ſurrounded for ſome miles by a moſt delightful country, incloſed by romantic rocks and mountains. The town was formerly ſurrounded by a ſtrong wall; but the fortifications are now entirely neglected except towards the ſea, where there are ſtill a few weak works. The quay is the principal public walk. Palermo is embelliſhed all round with avenues of trees, and has four principal entrances, facing the four cardinal points which are at the extremities of the two ſpacious ſtreets which croſs each other. Palermo is filled with public monuments, churches, monaſteries, palaces, fountains, ſtatues, and columns. The magiſtrates of Palermo are, firſt, the ſupreme judge, to whom belongs the adminiſtration of juſtice in criminal caſes; he is the head of the nobility, and immediately follows the viceroy in all the ſolemn functions. 2. The prætor, who is the perpetual deputy of the kingdom; chief in parliament of the order to whom appertains the right of regulating the king's demeſne, and poſſeſſed of the prerogative of captain-general during the abſence of the viceroy. 3. The prætorian court, which conſiſts of three judges, citizens of Palermo, choſen annually by the king. They aſſiſt the ſupreme judge in the deciſion of criminal affairs, and the prætor in the deliberations upon the finances; theſe two officers, however, have neither vote nor ſignature, except the prætor, in the buſineſs reſpecting the public bank and firſt fruits.

4. The

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4. The ſenate, compoſed of the prætor and ſix practitioners of the law, named by the king, who wear the toga after the manner of the ancient Roman ſenators, and principally inſpect the police which regards the grain and proviſions. There are alſo 7 great officers of ſtate, to each of whom is aſſigned a peculiar employment. 1. *Il Maeſtro Portelano*, to whom is committed the care of the public granaries, and who manages the ſale of the corn both at home and abroad. The impoſition of a tax upon this commodity has nearly proved the ruin of agriculture, eſpecially as the exportation of it is prohibited to all thoſe who are not able to pay an exorbitant price for that privilege. The quantity of corn annually produced in the iſland does not at preſent amount to more than a tenth part of what was collected in former years. 2. The auditor-general, who paſſes judgment, without appeal, upon all offences committed within the precincts of the palace. 3. The high admiral, whoſe juriſdiction extends over the marine. 4. The chancellor, who overlooks all the notaries of the kingdom, prepares all official patents, reads the propoſitions when the parliament aſſembles, and at a coronation tenders the oath of fidelity to the people, and proclaims that of the monarch, who thereby binds himſelf to maintain and defend the privileges of the city of Palermo. The ſame ceremony takes place upon the inſtallation of a viceroy. 5. The prothonotary of the queen's chamber, who has the inſpection of the demeſnes of ſix cities, viz. Syracuſe, Lentini, Carlentini, St Filippo, Mineo, and Virini, which were formerly appropriated to the queens of Sicily. 6. The chief ſecretary, who preſides over the officers appointed to receive the taxes and duties in the places of their reſpective juriſdictions. And, 7. the lieutenant of the royal exchequer, who has the adminiſtration of all effects that have been ſequeſtered or confiſcated. Palermo is the principal reſidence of the greater part of the Sicilian nobility; and as it is not the cuſtom for any gentleman to walk in the ſtreets, at leaſt 1000 carriages are kept in the town. They are for the moſt part in the Engliſh taſte, very elegant, with beautiful horſes, and as many footmen in ſplendid liveries as can be crowded together behind. Every evening all the people of rank drive about in this manner on the grand public terrace by the ſea-ſide. There are alſo very convenient hackney-coaches, covered and open. The dead in Palermo are never buried. The dead bodies are carried to the capuchin convent, which is one of the largeſt in Italy; where, after the funeral ſervice is performed, they are dried in a ſtove, heated by a compoſition of lime, which makes the ſkin adhere to the bones. They are then placed erect in niches, and faſtened to the wall by the back or neck. A piece of coarſe drab is thrown over the ſhoulders and round the waſte; and their hands are tied together, holding a piece of paper with their epitaph, which is ſimply their names, age, and when they died. Women are dried as well as the men, but are not expoſed. Nobles are ſhut up in cheſts. The number of the inhabitants is above 200,000. There is a magnificent caſtle built near the ſea-ſide, wherein the viceroy reſides ſix months in the year; and his preſence draws a great number of nobility to this place. This city has ſuffered greatly by earthquakes, particularly in 1693; and it was greatly damaged by a fire in 1730, when a magazine of powder was blown up, containing 400 tons. Lon. 13. 23. E. Lat. 38. 15. N.

PALERNO, two towns of Naples: 1. in Calabria Citra, 6 miles SSW. of Coſenza: 2. in Principato Ultra, 12 miles WNW. of Conſa.

PALES, in Pagan worſhip, the goddeſs of the ſhepherds; to whom they offered milk and honey, in order that ſhe might deliver them and their flocks from wild beaſts and infectious diſeaſes. This goddeſs is repreſented as an old woman. She was worſhipped with great ſolemnity at Rome; and her feſtivals called PALILIA, were celebrated on the 21ſt of April, the day that Romulus began to lay the foundation of the city of Rome. The ceremony conſiſted in burning heaps of ſtraw, and in leaping over them. No ſacrifices were offered, but purifications were made with the ſmoke of horſes blood, and with the aſhes of a calf, that had been taken from the belly of its mother, after it had been ſacrificed, and with the aſhes of beans. The purification of the flocks was alſo made with the ſmoke of ſulphur, of the olive, the pine, the laurel, and the roſemary. Offerings of mild cheeſe, boiled wine, and cakes of millet, were afterwards made to the goddeſs. Some call this feſtival PARILIA, from *pariendo*, *bringing forth*, becauſe the ſacrifices were offered to the divinity for the fecundity of the flocks.

PALESCIANO, a town of Naples, in Otranto; 2½ miles SE. of Motola.

(1.) PALESTINE, a country highly celebrated in antiquity, now a part of Aſiatic Turkey, ſituated between 31° 30′ and 33° 20′ lat. N. and between 34° 50′ and 37° 15′ lon. E. It is bounded by Mount Libanus, which divides it from Syria, on the N. by Mount Hermon, which ſeparates it from Arabia Deſerta, on the E; by the mountains of Seir and the deſarts of Arabia Petræa, on the S.; and by the Mediterranean ſea on the W.

(2.) PALESTINE, ANCIENT NAMES AND BOUNDARIES OF. This once fertile and happy ſpot was firſt called the land of *Canaan*, or *Chanaan*, from Noah's grandſon. In Scripture, however, it is frequently diſtinguiſhed by other names; ſuch as the *Land of Promiſe*, the *Land of God*, the *Land of Iſrael*, &c. It received the name of *Paleſtine* from the *Paleſtines* or *Philiſtines*, who poſſeſſed a great part of it; and it had the name of JUDÆA, or *Judæa Paleſtina*, from *Judah*, the moſt conſiderable of the 12 ſons of Jacob, or rather from the tribe, his deſcendants. The Chriſtians have denominated it the *Holy Land*; partly on account of the many ſingular bleſſings it received from the Divine Providence, and partly on account of its metropolis being made the centre of God's worſhip and his peculiar habitation; but much more for its being the place of our Saviour's birth, the ſcene of his preaching and manifold miracles; eſpecially the place in which he accompliſhed the great work of our redemption. As to the name of *Judæa*, it did not begin to receive that till after the return of the Jews from the Babyloniſh captivity, though it had been ſtyled long before the *Kingdom of Judah*, in oppoſition to that of *Iſrael*, which revolted from it under Jeroboam, in the reign of Rehoboam the

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ſon of Solomon. But after the return, the tribe of Judah, the only one that made any figure, ſettling at Jeruſalem, and in the countries adjacent, quickly gave its name to the whole territory. By profane authors it was called by many different names; ſuch as Syria, Paleſtina Syria, Cœleſyria, Idumæa, Idumæa, and Phœnicia or Phœnice; but theſe are ſuppoſed only to have been given out of contempt to the Jewiſh nation, whom they looked upon as unworthy of any other name than what diſtinguiſhed the moſt obſcure parts of the neighbouring provinces. That part of the country, which was properly called the *Land of Promiſe*, was incloſed on the W. by the Mediterranean; E. by the lake Aſphaltites, the Jordan, the ſea of Tiberias or Galilee, and the Samachonite lake; N. by the mountains of Libanus, or rather Antilibanus, or the province of Phœnicia; and on the S. by that of Edom or Idumæa, from which it was parted by another ridge of high mountains. The boundaries of the other part, which belonged to the two tribes and an half beyond the Jordan, are not ſo eaſily defined, as well as thoſe of the conqueſts made by the more proſperous kings of the Jews. All that can be ſaid with any probability is, that the river Arnon was the firſt northern boundary on that ſide.

(3.) PALESTINE, CLIMATE, FERTILITY, PRODUCE, &c. OF. The climate is happy. The longeſt day is not above 14 hours 15 minutes. The Scripture is pregnant with proofs of the extraordinary richneſs and fecundity of this once happy land, and of the vaſt number of people that lived in it. The exports of corn, wine, oil, raiſins, &c. were very large. It is now remarkable only for barrenneſs and ſterility. Such have been the effects of the Turkiſh deſpotiſm.

(4.) PALESTINE, DIVISIONS OF. Judea, in its largeſt ſenſe was divided into maritime and inland, as well as into mountainous and champain; and again ſubdivided into Judea on this ſide, and Judea beyond Jordan. But the moſt conſiderable diviſion is that which was made among the 12 tribes, by lot, to prevent all murmuring and diſcontent among that ſtubborn people; of theſe, two and a half were ſeated beyond Jordan, and the reſt on this ſide. The next remarkable diviſion was made by king Solomon, who divided his kingdom into 12 provinces or diſtricts, each under a peculiar officer; and every one of theſe was to ſupply the king with proviſions for his houſehold in his turn; that is, each for one month in the year. But the moſt fatal diviſion of all was, that which obtained under his imprudent ſon Rehoboam; when ten of the twelve tribes revolted, under the conduct of Jeroboam, who became head of this new monarchy, ſtyled *the kingdom of Iſrael* in oppoſition to that of *Judah*, the title which diſtinguiſhed the maimed kingdom of Rehoboam from that time downwards. Under the ſecond temple the diſtinction laſted a conſiderable time, and the ſame hoſtilities continued between theſe two kingdoms; that of Iſrael taking the name of *Samaria* from its capital. The inhabitants were a mixture of the old Iſraelites, and of new colonies ſent thither by the kings of Aſſyria after their conqueſt of it, till they were ſubdued by the Maccabees, and their metropolis deſtroyed. Under the Romans it began to be divided into tetrarchies and toparchies: the larger were thoſe of Judea, Samaria, and Galilee, Upper and Lower: the leſſer, thoſe of Geraritica, Sarona, and others of leſs note; all which lay on this ſide of the Jordan. The reſt, on the other ſide, were thoſe of Gilead, Peræa, Gaulonitis, Auranitis, Batanea, and Decapolis. Joſephus mentions another diviſion made in Gabinius's time into 5 diſtricts, or, as he ſtyles them, *συνέδρια* or *councils*, agreeable to the Roman manner: theſe were Jeruſalem, Jericho, and Sephoris on this ſide Jordan; and Gadaris and Amathus on the other. In the reigns of the Chriſtian Emperors, it was divided afreſh into *Paleſtina Prima*, *Secunda*, and *Tertia* or *Salutaris*; which laſt included the greater part, if not the whole country.

(5.) PALESTINE, EXTENT OF. The extent of this country is variouſly ſtated by geographers; ſome giving it no more than 170 or 180 miles from N. to S. and 140 in breadth where broadeſt, though not much above half the breadth where narroweſt. But from the lateſt and moſt accurate maps, it appears to extend near 200 miles in length, about 80 in breadth about the middle, and about 10 or 15, more or leſs, where it widens or ſhrinks.

(6.) PALESTINE, PRESENT STATE OF. The whole country is now reduced to a diſtrict or province, under the beglerbeg, or baſha, of Scham or Damaſcus, who hath 7 ſangiacs or ſubgovernors under him; viz. 1. The ſangiac of Damaſcus, who is under the baſha of that province; 2. Of Jeruſalem, or, as the Turks call it, *Cudjembaric* or *Coudſcherif*; 3. Aglum; 4. Babara; 5. Scifat; 6. Gaza; 7. Nabolos. Each of theſe has a number of ziamets, and each ziamet has a number of timariots under them; for the better underſtanding of which terms, we ſhall refer our readers to Sir Paul Ricaut's account of the Ottoman empire. The ſangiacate of Jeruſalem hath 9 of the former, and 16 of the latter claſs. The former live by oppreſſing the people under them, and extort contributions of every thing that comes within their reach, ſuch as the protection of travellers, merchants, and caravans; but being all under their reſpective baſhas, who are ſtill more griping than their underlings, they are commonly fleeced of a conſiderable part of their unjuſt gains. As for the places of their reſidence, except in a conſiderable city, as Damaſcus and Jeruſalem, the reſt are either ſome old cities or inconſiderable villages. There are many curioſities in Paleſtine, both natural and artificial; but they are ſo very numerous as almoſt to preclude deſcription: we therefore refer our readers to the *Ancient Univerſal Hiſtory*, Vol. II. where they are particularly deſcribed. The principal mountains, rivers, and other places of note, we notice under their reſpective names.

(1.) PALESTRINA, a town of Italy, in the Campagna of Rome, with a biſhop's ſee. It is the capital of a principality of the ſame name, and the biſhop is one of the ſix cardinal biſhops. It was anciently famous for the temple of Fortune being then called PRÆNESTE, and ſeated on the top of a mountain, the ruins of which may yet be ſeen. Lon. 12. 55. E. Lat. 41. 51. N.

(2.) PALESTRINA, an iſland of Maritime Auſtria, one of the largeſt and moſt populous of the Lagunes, near Venice, and where the chief noble-

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men have seats. It is 12 Italian miles, or 15,000 paces, in length, and 400 in breadth. It has 7000 inhabitants.

(3.) PALESTRINA, a large and rich market town in the above island.

PALESTRIUM, a town of European Turkey, in Livadia; 34 miles N. of Lepanto.

(1.) * PALETTE. *n. f.* [*palette*, Fr.] A light board on which a painter holds his colours when he paints.—Let the ground of the picture be of such a mixture, as there may be something in it of every colour that composes your work, as it were the contents of your *palette*. *Dryden.*

Ere yet thy pencil tries her nicer toils,
Or on thy *palette* lie the blended oils,
Thy careless chalk has half achiev'd thy art,
And her just image makes Cleora start. *Tickle.*
Her skilful hand an ivry *palette* grac'd,
Where shining colours were in order plac'd. *Gay.*

(2.) PALETTE. See PALLET.

PALFA, a town of Stiria, 18 m. N. of Leoben.

PALFIN, John, an eminent surgeon, anatomist, and lecturer in surgery, at Ghent, the place of his birth; acquired great reputation by his learning and works. The principal of these are, 1. A Treatise on Osteology, in 12mo, Paris, 1731. 2. Anatomy of the Human Body, in 2 vols 8vo, Paris, 1734. He died at Ghent at a great age, in 1730.

* PALFREY. *n. f.* [*palefroy*, Fr.] A small horse fit for ladies: it is always distinguished in the old books from a war horse.—

Her wanton *palfrey* was overspread
With tinsel trappings, woven like a wave. *Spens.*

—The damsel is mounted on a white *palfrey*, as an emblem of her innocence. *Addison.*—

The smiths and armorers on *palfreys* ride. *Dryd.*

* PALFREYED. *adj.* [from *palfrey*.] Riding on a palfrey.—

Such dire achievements sings the bard that tells,
Of *palfrey'd* dames, bold knights and magick spells, *Tickle.*

PALIACUR, a town of Ceylon, 80 m. NNW. of Trincomaly.

PALIBOTHRA, an ancient city of India, mentioned by Strabo (l. xv.) supposed to be ALLAHABAD, or PATNA.

PALICATA, or PALICATE, } a sea port town of India, on this side of the Ganges. It is seated on the coast of Coromandel, in the kingdom of Carnate, 70 miles N. of Fort St George. Here the Dutch have a factory, and a fort, called the *Fort of Guelderland*. Lon. 80. 1. E. Lat. 13. 34. N.

PALICAUD, or PALICAUDCHERRY, } or PALGATCHERRY, a fortress of considerable strength in India, which commands the passage between the two coasts of Malabar and Coromandel, by way of Tritchinopoly and Combettore countries; there is also a communication with it through the Naye country. It is in the hands of the English, and was of great importance to them when Coimbettore was in the hands of Tippoo.

PALICI, or PALISCI, in the mythology, two deities, sons of Jupiter by Thalia, whom Æschylus, according to Macrobius, calls *Ætna*, in a tragedy which is lost. The nymph Ætna, when pregnant, begged Jupiter to remove her from the pursuit of Juno. Upon which he concealed her in the bowels of the earth; and when the time of her delivery arrived, the earth opened and brought into the world two children, who were named *Palici, ἀπὸ τοῦ παλιν ἰλθεῖν. Because they came again into the world from the bowels of the earth.* These deities were worshipped with many ceremonies by the Sicilians; and near their temple were two small lakes, which were supposed to have sprung out of the earth when they were born. Near these pools it was usual to take the most solemn oaths, when any wished to decide controversies and quarrels. If any of the persons who took the oaths were perjured, they were immediately expected to be punished supernaturally; and those whose oath, by the deities of the place, was sincere, departed unhurt. The Palici had also an oracle, which was consulted upon some great emergencies, and which rendered the truest and most unequivocal answers. In a superstitious age, the altars of the Palici were stained with the blood of human sacrifices; but this barbarous custom did not last long.

* PALIFICATION. *n. f.* [*palus*, Latin.] The act or practice of making ground firm with piles.—I have said nothing of *palification* or piling of the ground-plot. *Wotton.*

PALIFISCO, a town of Naples, in Lavora.

PALILIA. See PALES.

PALILICUM, the same with ALDEMARAN.

PALIBAM. See PALAMBAM, N° 1.

(1.) PALIMBAN, a town of Java, on the SW. coast, at the entry of the Straits of Sunda, 150 miles WSW. of Batavia.

(2. PALIMBAN. See BALAMBUAN, and PALAMBANG.

PALIMBUM. See PALAMBANG, N° 1.

(1.) * PALINDROME. *n. f.* [παλινδρομία, παλιν and δρόμος.] A word or sentence which is the same read backward or forward: as, *madam;* or this sentence, *Subi dura a rudibus.*

(2.) PALINDROME, } Some have refined upon
(2.) PALINDROMUS. } the Palindromus, and composed *verses*, each word of which is the same backwards as forwards; for instance, that of Camden:

Odo tenet mulum, madidam mappam tenet Anna.
Anna tenet mappam madidam, mulum tenet Odo.

PALINGE, a town of France, in the dep. of Saone and Loire, on the Charollois canal, 7½ m. NNW. of Charolles, and 15 S. of Montcenis.

PALINGENESIA, amongst divines, is the same with REGENERATION. Among chemists, it denotes the producing of a body from its principles.

PALINGENIUS, Marcellus, author of a poem in 12 books, entitled *Zodiacus Vitæ*. Little else is known of him than that he lived at the court of Hercules II. of Este, duke of Ferrara, and died some time between 1537 and 1543.

PALINGUIR, one of the PHILIPPINE islands, N. of Cape Enganne, on the isle of Luçon, 15 miles in circumference.

* PALINODE. } *n. f.* [παλινῳδία.] A recanta-
* PALINODY. } tion.

I, of thy excellence, have oft been told;
But now my ravisht eyes thy face behold:

Who

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Who therefore in this weeping *palinode*
Abhor myſelf, that have diſpleas'd my God,
In duſt and aſhes mourn. *Sandys.*

PALINURI PROMONTORIUM, a town of Italy, mentioned by *Virgil* and *Velleius*, with a cognominal port, at the S. extremity of the Sinus Pæſtanus on the coaſt of Lucania; ſo called from PALINURUS. *Mela, Dionyſius Halicarnaſſeus.*

PALINURUS, in fabulous hiſtory, Æneas's pilot, who fell into the ſea when aſleep; and was three days expoſed to the tempeſts and its agitation, and at laſt came ſafe aſhore, where the cruel inhabitants of the place murdered him to get his clothes. His body was left unburied on the ſeaſhore; which prevented him from croſſing the Stygian lake for 100 years, according to the ſuperſtitious ideas of the Romans.

PALIO-CASTRO. See PALEO-CASTRO, N° 1, and POLICASTRO.

* *To* PALISADE. *v. a.* [from the noun.] To incloſe with paliſades.

(1.) * PALISADE. } *n. f.* [*paliſade*, Fr. *paliſado*,
(1.) * PALISADO. } Spaniſh, from *palus*, Lat.] Pales ſet by way of incloſure or defence.—

The Trojans round the place a rampart caſt,
And *paliſades* about the trenches plac'd. *Dryd.*

—The wood is uſeful for *paliſadoes* for fortifications. *Mortimer.*—The city is ſurrounded with a ſtrong wall, and that wall guarded with *paliſadoes*. *Broome.*

(2.) PALISADOES, or PALISADES, in fortification, are ſtakes made of ſtrong ſplit wood, about 9 feet long, 6 or 7 inches ſquare, 3 feet deep in the ground, in rows about 2½ or 3 inches aſunder, placed in the covert way, at 3 feet from, and parallel to, the parapet or ſide of the glacis, to ſecure it from ſurpriſe. They are alſo uſed to fortify the avenues of the open ſorts, gorges, half-moons, the bottoms of ditches, and in general all poſts liable to ſurpriſe. They are uſually fixed perpendicularly, though ſome make an angle inclining towards the ground next the enemy, that the ropes caſt over them to tear them up may ſlip off.

(3.) PALISADOES, TURNING, an invention of Mr Coehorn, to preſerve the paliſadoes of the covert way from the beſieger's ſhot. They are ſo ordered, that as many of them as ſtand in the length of a rod, or about ten feet, turn up and down like traps, ſo as not to be in ſight of the enemy till they juſt bring on their attack; and yet are always ready to do the proper ſervice of paliſades.

PALISCI. See PALICI.

* PALISH. *adj.* [from *pale*.] Somewhat pale.—Spirit of nitre makes with copper a *paliſh* blue. *Arbuthnot.*

(1.) PALISSE, in geography, a town of France, in the department of the Allier, and diſtrict of Cuſſet, 10½ miles NE. of Couſſet, and 9 SW. of Donjon.

(2.) PALISSE, *n. f.* in heraldry, a bearing like a range of paliſades before a fortification, repreſented on a feſſe, raiſing up a conſiderable height, and pointed a-top, with the field appearing between them.

PALISSY, Bernard DE, an eminent French chemiſt born at Agen, about 1524. He was firſt a potter and image-maker; and ſoon diſtinguiſhed himſelf by his ſkill in painting on glaſs; but afterwards ſtill more as a chemiſt, by publiſhing various treatiſes on that ſcience. A good edition of his works was publiſhed at Paris in 1777, by F. St Fond. He firſt taught the true theory of fountains. He died in 1590.

(1, 2.) PALIURUS, in ancient geography, a river of Africa, with a town of the ſame name, at the W. end of Egypt, on the Mediterranean. *Strabo*, xviii. The river is now called *Nabil.*

(2.) PALIURUS, in botany. See RHAMNUS, N° 8.

(1.) * PALL. *n. f.* [*pallium*, Lat.] 1. A cloak or mantle of ſtate.—

As fair Aurora in her purple *pall*,
Out of the Eaſt the dawning day doth call;
So forth ſhe comes. *Spenſer.*

Let gorgeous tragedy
In ſcepter'd *pall* come ſweeping by. *Milton.*

2. The mantle of an archbiſhop.—An archbiſhop after conſecration ſhall have the *pall* ſent him. *Ayliffe.* 3. The covering thrown over the dead.—

The right ſide of the *pall* old Ægeus kept,
And on the left the royal Theſeus wept. *Dryd.*

(2.) PALL, in geography, a circar of Hindoſtan, in Guzerat.

(3.) PALL, in heraldry, a figure like a Greek T, about the breadth of a pallet; it is by ſome heralds called a *croſs pall*, on account of its being looked upon as an archiepiſcopal bearing.

(1.) * *To* PALL. *v. a.* [from the noun.] To cloak; to inveſt.—

Come, thick night,
And *pall* me in the dunneſt ſmoak of hell. *Shak.*

(2.) * *To* PALL. *v. n.* [Of this word the etomologiſts give no reaſonable account: perhaps it is only a corruption of *pale*, and was applied originally to colours.] To grow vapid; to become inſipid.—Empty one bottle into another ſwiftly, leſt the drink *pall*. *Bacon.*

Beauty ſoon grows familiar to the lover,
Fades in the eye, and *palls* upon the ſenſe. *Addiſ.*

(3.) * *To* PALL. *v. a.* 1. To make inſipid or vapid.—Reaſon and reflection, repreſenting perpetually to the mind the meanneſs of all ſenſual gratifications, blunt the edge of his keeneſt deſires, and *pall* all his enjoyments. *Atterbury.*—

They *pall* Moliere's and Lopez' ſprightly ſtrain. *Swift.*

2. To impair ſprightlineſs; to diſpirit.—

A miracle
Their joy with unexpected ſorrow *pall'd*. *Dryd.*

Baſe, barbarous man, the more we raiſe our love,
The more we *pall*, and cool, and kill his ardour. *Dryden.*

3. To weaken; to impair.—

I'll never follow thy *pall'd* fortunes more. *Shak.*

4. To cloy.—*Pall'd* appetite is humorous, and muſt be gratified with ſauces rather than food. *Tatler.*

PALLA, in Roman antiquity, a mantle which women wore over the gown called *ſtola*. It was born on the left ſhoulder; whence paſſing to the other ſide, under the right arm, the two ends were bound under the left arm, leaving the breaſt and arm quite bare. It had many folds, and derived its name from πάλλω, to *ſhake* or *tremble*.

PALLADES.

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PALLADES, virgins who were consecrated to Jupiter by the Thebans of Egypt. *Strabo* xvii.

PALLADINI, Archangela, a celebrated Italian paintress, born at Pisa in 1599. Her father was a painter, and she attained great excellence in portrait painting; but died young, in 1622.

PALLADINO, James, an Italian author, born at Teramo, in Naples, in 1349. He became successively Bp. of Monopoli, Tarentum, Florence, and Spoletto, and legate in Poland. Among his works, which savoured of the spirit of the age, the most celebrated is the *Processus Luciferi contra Jesum*. He died in Poland in 1417.

PALLADIO, Andrew, a celebrated Italian architect of the 16th century, born in Vicenza, and the disciple of Triffin. He published exact drawings of the principal works of antiquity at Rome, with commentaries, and a *Treatise of Architecture*. m 4 books, in 1570.

PALLADIUM, in fabulous history, a statue of the goddess Pallas. It was about three cubits high, and represented the goddess sitting and holding a pike in her right hand, and in her left a distaff and a spindle. It was said to have fallen down from heaven near the tent of Ilus, as he was building the citadel of Ilium. Others suppose that it fell at Pessinus in Phrygia, or that Dardanus got it as a present from his mother Electra. Some maintain, that the palladium was made with the bones of Pelops by Abaris; but Apollodorus says, that it was only a piece of clock-work which moved of itself. However various the opinions of ancient authors be about this celebrated statue, it is universally allowed, that on its preservation depended the safety of Troy. This fatality, the Greeks, during the Trojan war, were well aware of; and therefore Ulysses and Diomedes were commissioned to steal it. This they effected, and they were directed how to carry it away by Helenus, a son of Priam, who in this betrayed his country, because his brother Deiphobus, at the death of Paris, had married Helen, of whom he was enamoured. Minerva was enraged at the violence offered to her statue; and, according to Virgil, the Palladium itself seemed to have received life and motion; and by the flashes which started from its eyes, and sudden springs from the earth, it seemed to shew the resentment of the goddess. The true palladium, as is observed by some, was not carried away from Troy by the Greeks, but only a statue of similar size and shape, which was placed near it, to deceive whatever sacrilegious persons attempted to steal it. The palladium, therefore, they pretend, Æneas conveyed safe from Troy to Italy, and it was afterwards preserved by the Romans with the greatest secrecy and veneration, in the temple of Vesta, unknown to all but the vestal virgins. The destiny of Rome was believed to depend upon it; and there were several others made perfectly like it, to secure it from being stolen, as was that at Troy, which the oracle of Apollo declared should never be taken so long as the Palladium was found within its walls. A palladium was also placed in the citadel of Athens.

(2.) PALLADIUM, in metallurgy, a metallic alloy, which was exposed for sale at a shop in Gerard Street, as a new noble metal. It resisted all attempts to decompose it, but Mr Chenevix, by sympathetical experiments, discovered it to be a combination of mercury and platina. *Repertory of Arts*, Nov. 1803.

(1.) PALLADIUS, bishop of Helenopolis in Bythynia, and afterwards of Aspona. He was a Galatian, and born at Cappadocia. He became an Anchorite in the mountain of Nebria in 388, and was consecrated a bishop in 401. He was an intimate friend of St John Chrysostom, whom he never forsook during the time of his persecution, nor even in his exile. He went to Rome some time after Chrysostom's death, and, at the request of Lausus, governor of Cappadocia, composed the history of the Anchorites or Hermits, and entitled it *Lausiaca*, after that lord, to whom he dedicated it in 420, when it was written, being then in the 20th year of his episcopacy, and 53d of his age. His history was published in Greek by Meurfius at Amsterdam, in 1619, and in Latin in the *Bibliotheca Patrum*.

(2.) PALLADIUS, R. T. Æmilianus, an author who flourished after the decline of literature at Rome, but the precise period is not known. A treatise written by him, *De Re Rustica*, was published at Paris, in *L'Economie Rurale*, vol. 5. in 1775.

(3.) PALLADIUS, a Greek physician, who wrote a Treatise on Fevers, which was published at Leyden, in 8vo, 1745.

PALLANTEUM. See PALATIUM, N° 2.

PALLANTIA, an ancient town of Spain, on the Cea; now called PALENCIA. *Mela*, ii. 6.

PALLANTIAS, a name of Aurora, from the giant Pallas. *Ovid.*

PALLANTIDES, the 50 sons of PALLAS, the son of Pandion, and brother of Ægeus; who were all killed by Theseus, the son of Ægeus, whose succession they opposed. *Plut. in Thes.*

PALLANTIUM. See PALATIUM, N° 2.

(1.) PALLAS, in the mythology, a giant, the son of Cælus and Terra, who was killed by Minerva.

(2.) PALLAS, a name of Minerva, from πάλλειν to brandish, in allusion to her spear.

(3.) PALLAS. See PALLANTIDES.

(4.) PALLAS, a freed man of Claudius, celebrated for the power and the riches which he obtained. He advised the emperor to marry Agrippina, and to adopt her son Nero, for his successor, It was through him and Agrippina, that the death of Claudius was hastened, and that Nero was raised to the throne. Nero, however, discarded Pallas, and some time after, caused him to be put to death, that he might procure his great riches.

PALLASIA, in botany, a genus of the trigynia order, belonging to the dodecandria class of plants.

(1.) PALLAVICINI, Anthony, a cardinal, born at Genoa, in 1441, of a noble family. He was made bishop of Ventimille, and Pampeluna; enjoyed the confidence of Popes Innocent VIII, Alexander VI. and Julius II. and did them great service in various negociations. He died at Rome in 1507.

(2.) PALLAVICINI, Ferrante, an Italian wit of considerable note, descended of a noble family in Placentia, where he was born about the close of the 16th century. He gave early proofs of an extraordinary genius, and quickly acquired a masterly

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terly knowledge in the elements of claſſical erudition. He was afterwards ſent to complete his education in the monaſtery of Auguſtin friars at Milan, where he took the habit, lived much eſteemed for piety as well as learning, and raiſed great expectations of future fame; but being amorouſly inclined, he engaged in an intrigue with a young courteſan of Venice, whoſe charms proved irreſiſtible; and to enjoy them without reſtraint, he obtained leave from his general to make the tour of France. Accordingly, he pretended to ſet out for that country; but it was only to cover his real deſign. He never left Venice, but lived there privately, inchanted in the arms of his Venus; and impoſed upon his friends, by ſending them, in letters, feigned accounts of his travels through France; alſo informing them of ſeveral things reſpecting that court, which he learned from the advices of many conſiderable perſons with whom he correſponded. But ſuch a ſeries of impoſition could not laſt. Running ſhort of money, he wrote for the booksellers; and, among other pieces, publiſhed a Collection of Satirical Letters, the wit of which was chiefly levelled againſt the Spaniards, entitled, *The Courier rubbed of his mail.* Though licenſed by the inquiſitors, the ſecretary of the republic of Venice refuſed it his *imprimatur*; which irritated the author ſo much, that he publiſhed an enlarged edition of it, filled with ſevere invectives againſt, not only the Venetian ſecretary, but Pope Urban VIII. his nephews, and the whole family of the Barbarini. This raiſed him a freſh number of powerful enemies; who, by the treachery of one *Morſu*, a Frenchman, who pretended to be his friend, got him at laſt into their power; and, after a year's impriſonment at Avignon, brought him, for form's ſake, to a trial; and, notwithſtanding an excellent defence, condemned him to be beheaded, which was accordingly executed, in the flower of his age. The latter part of his life had been one continued ſeries of diſſipation, debauchery, folly, and extravagance. Yet he was not without ſome virtues. Sincere and faithful in his friendſhips, no man was ever a more eaſy prey to the treachery of others. His works were publiſhed in 2 vols, with his life prefixed, at Amſterdam, in 1696.

(3.) PALLAVICINI, Sforza, a learned cardinal, born at Rome in 1607. He became a Jeſuit, in 1638. He was much employed by Popes Innocent X. and Alexander VII. He wrote ſeveral works, the chief of which was a *Hiſtory of the Council of Trent*, wherein he oppoſes that of F. Paul.

PALLEIEROS, a mountain of Arabia, in Oman, 80 miles WSW. of Maſcat.

PALLENDORF, a town of Auſtria, 2 miles N. of Zitterſdorf.

PALLENE, a ſmall peninſula of Thrace or Macedonia, formerly called PHLEGRA. It is ſituated near the bay of Thermæ, and contains five cities, the principal of which is alſo called *Pallene*. It was famous in the mythology, for an engagement between the gods and the giants.

PALLENSES, a people of Cephalenia.

(1.) * PALLET. *n. ſ.* [*paillet*, in *Chaucer*; which was probably the French word from *paille*, ſtraw, and ſecondarily, a bed.] 1. A ſmall bed; a mean bed.—

Why rather, ſleep, lieſt thou in ſmoky cribs,
Upon uneaſy *pallets* ſtretching thee,
And hush'd with buzzing night-flies to thy ſlumber;
Than in the perfum'd chambers of the great?
Shak.

—His ſecretary was laid in a *pallet* near him for ventilation of his thoughts. *Watton's Buckingham.*

If your ſtray attendance be yet lodg'd,
Or ſhroud within theſe limits, I ſhall know,
Ere morrow wake, or the low-roofted lark
From her thatch'd *pallet* rouſe. *Milton.*

2. [*palette*, Fr.] A ſmall meaſure, formerly uſed by chirurgeons.—A ſurgeon drew from a patient in four days, 27 *pallets*, every *pallet* containing three ounces. *Hakewill.* 3. [In heraldry; *palus minor*, Lat.] A little poſt.

(2.) PALLET, among painters is a little oval table, or piece of wood, or ivory, very thin and ſmooth; on and round which the painters place the ſeveral colours they have occaſion for, to be ready for the pencil. The middle ſerves to mix the colours on, and to make the tints required in the work. It has no handle, but inſtead thereof, a hole at one end to put the left thumb through to hold it.

(3.) PALLET, among potters, crucible-makers, &c. a wooden inſtrument, almoſt the only one they uſe for forming, heating, and rounding their works. They have ſeveral kinds: the largeſt are oval, with a handle; others are round, or hollowed triangularly; others, in fine, are in manner of large knives, ſerving to cut off whatever is ſuperfluous on the moulds of their work.

(4.) PALLET, in gilding, an inſtrument made of a ſquirrel's tail, to take up the gold leaves from the pillow, and to apply and extend them on the matter to be gilt. See GILDING, § IV. 2.

(5.) PALLET, in heraldry, (§ 1. *def.* 3.) is nothing but a ſmall pale, conſiſting of one half of it in breadth, and therefore there are ſometimes ſeveral of them upon one ſhield.

(6.) PALLET, is alſo a part belonging to the balance of a watch or movement. See WATCH.

PALLI, a town of Aſiatic Turkey, in Diarbekir, 85 miles NW. of Diarbeck.

* PALLIAMENT. *n. ſ.* [*pallium*, Lat.] A dreſs; a robe.—

The people of Rome,
Send thee by me their tribune,
This *palliament* of white and ſpotleſs hue. *Shak.*

PALLIANO, a town of Italy, in the Campagna of Rome; 20 miles E. of Rome.

PALLIARDISE. *n. ſ.* [*palliardiſe*, Fr.] Fornication; whoring. Obſolete.

PALLIATÆ, a name which the Romans gave to ſuch plays as laid the plot in Greece, and required the performers to appear in Grecian habits. It is uſed in contradiſtinction to *togatæ*, in which the ſcene was laid at Rome, and the dreſſes were Roman. The word is derived from *pallium*, which was a part of dreſs peculiar to the Greeks; whereas the *toga* belonged to the Romans only. See COMEDY, TOGATÆ, &c.

* *To* PALLIATE. *v. a.* [*pallio*, Lat. from *pallium*, a cloak; *pallier*, Fr.] 1. To cover with excuſe.—They never hide or *palliate* their vices. *Swift.* 2. To extenuate; to ſoften by favourable repre-

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repreſentations.—The fault is to extenuate, *palliate*, and indulge. *Dryden.* 3. To cure imperfectly or temporarily, not radically; to eaſe, not cure.

(1.) * PALLIATION. *n. ſ. palliation*, Fr. from *palliate*.] 1. Extenuation; alleviation; favourable repreſentation.—I ſaw clearly through all the pious diſguiſes and ſoft *palliations* of ſome men. *K. Charles.*—Such bitter invectives againſt other mens faults, and indulgence or *palliation* of their own, ſhews their zeal lies in their ſpleen. *Gov. of the Tongue.* 2. Imperfect or temporary, not radical cure; mitigation, not cure.—If the juſt cure of a diſeaſe be full of peril, let the phyſicians reſort to *palliation*. *Bacon's Nat. Hiſtory.*

(2.) PALLIATION, or a PALLIATIVE CURE, in medicine, is when, in deſperate and incurable diſeaſes, after predicting the fatal event, the phyſician preſcribes ſome remedies for mitigating the pain, or ſome other urgent ſymptoms, as in ulcerated cancers, or cancerous fiſtulas, and the like.

(1.) * PALLIATIVE. *adj.* [*palliatif*, Fr. from *palliate*.] 1. Extenuating; favourably repreſentative. 2. Mitigating, not removing; temporarily or partially, not radically curative.—Conſumption pulmonary ſeldom admits of other than a *palliative* cure. *Arbuthnot.*

(2.) * PALLIATIVE. *n. ſ.* [from *palliate*.] Something mitigating; ſomething alleviating.—It were more ſafe to truſt to the general averſion of our people againſt this coin, than apply thoſe *palliatives* which weak, perfidious, or abject politicians adminiſter. *Swift.*

PALLICODE, a town of Indoſtan, in Myſore; 11 miles NW. of Darampoory.

* PALLID. *adj.* [*pallidus*, Lat.] Pale; not high-coloured; not bright. *Pallid* is ſeldom uſed of the face.—

The violet *pallid* blue. *Spenſer.*

When from the *pallid* ſky the ſun deſcends. *Thomſon.*

Its *pallid* bloom ſick-ſmelling hen-bane ſhow'd. *Harte.*

PALLIFICATION. *n. ſ.* or PILING, in architecture, the piling of ground-work, or ſtrengthening it with piles of timber driven into the ground, when buildings are erected on a marſhy ſoil.

PALLIO CO-OPERIRE. It was an ancient cuſtom, where children were born out of lawful wedlock, and their parents were afterwards married, that thoſe children, together with the father and mother, ſhould ſtand *pallio co-operti*, under a cloth, while the marriage was ſolemnizing; which was a kind of adoption, and had the effect of a legitimation.

PALLIOT, Peter, a French engraver, printer, bookſeller, and author, born at Dijon, in Normandy. His works are highly valued by literary antiquaries; particularly two tracts *on Blazoning* and *Genealogy*. His folio edition contains above 6000 eſcutcheons of his own engraving.

PALLIS, a lake of Ireland, in King's county, 12 miles WNW. of Portarlington.

PALLISER, Sir Hugh, admiral of the white, a brave Britiſh ſea officer, born in 1721. He early diſtinguiſhed himſelf in the navy, in which he ſerved 46 years. He was with Admiral Matthews in the Mediterranean in 1744; was made poſt-captain in 1746; was at the capture of Quebec in 1759; was made a comptroller of the navy and created a baronet in 1773. In a word, he enjoyed the confidence of his king and countrymen till the unfortunate event of the 28th July 1788, when he was accuſed by Admiral Keppel, but acquitted. (See ENGLAND, § 99, and KEPPEL.) He died March 19. 1796.

PALLISER'S ISLANDS, a cluſter of iſlands, in the S. Pacific Ocean. The largeſt is 15 miles long and 9 broad. See COOK, N° III. § 9. Lon. 146° to 147° W. Lat. 15° to 16° N.

PALLISER'S PORT. See COOK, N° III. § 10.

(1.) PALLIUM, in antiquity, an upper garment, or mantle worn by the Greeks, as the toga was by the Romans. Each of theſe were ſo peculiar to the reſpective nations, that *Palliatus* is uſed to ſignify a Greek, and *Togatus* a Roman.

(2.) PALLIUM, a word often mentioned in our old hiſtorians. Durandus tells us that it is a garment made of white wool, after the following manner, viz. The nuns of St Agnes, every year, on the feaſt-day of their ſaint, offer two white lambs on the altar of their church, during the time they ſing *Agnus Dei*, in a ſolemn maſs; which lambs are afterwards taken by two of the canons of the Lateran church, and by them given to the Pope's ſubdeacons, who ſend them to paſture till ſhearing time, and then they are ſhorn, and the pall is made of their wool mixed with other white wool. The pall being thus made, is carried to the Lateran church, and there placed on the high altar, by the deacons, on the bodies of St Peter and St Paul; and after an uſual watching, it is carried away in the night, and delivered to the ſubdeacons, who lay it up ſafe. And, becauſe it was taken from the body of St Peter, it ſignifies the plenitude of eccleſiaſtical power; and therefore it was the prerogative of popes, who pretend to be the immediate ſucceſſors of that ſaint, to inveſt other prelates with it; which at firſt was done nowhere but at Rome, though afterwards at other places.

* PALLMALL. *n. ſ.* [*pila* and *malleus*, Lat. *pall mall*, French.] A play in which the ball is ſtruck with a mallet through an iron ring.

PALLU, a town of France, in the department of Mayenne; 15 miles W. of Alençon.

PALLUAU, two towns of France: 1. In the department of Indre, 6 miles ESE. of Chatillon, and 16½ NW. of Chateau-roux: 2. In that of the Vendee, 10½ miles ESE. of Challans, and 10½ NW. of Roche ſur Yon.

(1.) * PALM. *n. ſ.* [*palma*, Latin; *palmer*, Fr.] 1. A tree of great variety of ſpecies; of which the branches were worn in token of victory; it therefore implies ſuperiority.—There are 21 ſpecies of this tree, of which the moſt remarkable are the greater *palm* or date tree. The dwarf *palm* grows in Spain, Portugal, and Italy, from whence the leaves are ſent hither and made into flag-brooms. The oily *palm* is a native of Guinea and Cape Verd iſland, but has been tranſplanted to Jamaica and Barbadoes. It grows as high as the main maſt of a ſhip. *Miller.*—

Get the ſtart of the majeſtic world,
And bear the *palm* alone. *Shak. Jul. Cæſar.*

—Nothing better proveth the excellency of this ſoil than the abundant growing of the *palm*-trees without labour of man. *Raleigh.*—Above others who

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who carry away the *palm* for excellence, is Maurice, Landgrave of Heſs. *Peacham on Muſic.*—

Fruits of *palm*-tree, pleaſanteſt to thirſt
And hunger both. *Milton.*

Palms, new pluck'd from paradiſe,
With ſpreading branches more ſublimely riſe.
Dryden.

2. Victory; triumph; [*palme*, Fr.]—

Namur ſubdued is England's *palm* alone.
Dryden.

3. The hand ſpread out; the inner part of the hand; [*palma*, Lat.]—

By this virgin *palm* now kiſſing thine,
I will be thine. *Shak.*

—Drinks of extreme thin parts fretting, put upon the back of your hand, will, with a little ſtay, paſs through to the *palm*, and yet taſte mild to the mouth. *Bacon.*—

Seeking my ſucceſs in love to know,
I tried th' infallible prophetic way,
A poppy-leaf upon my *palm* to lay. *Dryden.*

4. A hand, or meaſure of lengths comprifing three inches; [*palme*, Fr.—The length of a foot is a 6th part of the ſtature; a ſpan one-8th of it; a *palm* or hand's breadth one-24th; a thumb's breadth or inch one-72d; a forefinger's breadth one-96th. *Holder on Time.*—Henry VIII. of England, Francis I. of France, and Charles V. emperor, were ſo provident, as ſcarce a *palm* of ground could be gotten by either, but that the other two would ſet the balance of Europe upright again. *Bacon.*—

The ſame hand into a fiſt may cloſe,
Which inſtantly a *palm* expanded ſhows. *Denh.*

(2.) PALM. (§ 1. *def.* 1.) in botany. See PALMÆ, and PHOENIX, N° 4.

(3.) *The* PALM (§ 1. *def.* 2.) has among almoſt all nations been regarded as an emblem of victory, and aſſigned as the reward of it. The reaſon why this tree was adopted, and made uſe of to repreſent victory, is ſaid to be, becauſe it is ſo elaſtic, that if preſſed by the greateſt weight, it will riſe ſuperior to the preſſure, and be able to reſtore itſelf to its former ſtate, appearing almoſt *invincible.*

(4.) PALM, CABBAGE. See ARECA, N° 2.

(5.) PALM, COCOA NUT. See COCOS, N° 1.

(6.) PALM, DWARF. See CHAMÆROPS.

(7.) PALM, MALABAR. See BORASSUS.

(8.) PALM, MOUNTAIN. See CORYPHA.

(9.) PALM SUNDAY, in the Chriſtian church, the Sunday before Eaſter; being ſo called in memory of our Saviour's triumphal entry into Jeruſalem, when the multitude that attended him ſtrewed branches of palm trees in his way. The ancients had other names for this day: for, 1. They called it *Dominica Competentium*, i. e. Sunday of the Competents; becauſe on that day the catechumens came to aſk the biſhop leave to be admitted to baptiſm, which was conferred the Sunday following. They had alſo then given them the ſymbol or creed, to get off by heart, to be repeated to the biſhop in the ceremony of baptiſm. 2. They called it *Capitilavium*, the Sunday of waſhing the head; becauſe thoſe who were to be baptiſed the following Sunday were prepared by waſhing their heads on this day. Some time afterwards they called it *Indulgence Sunday*, becauſe the emperors and patriarchs uſed to diſtribute gifts on that day.

(10.) PALM TREE, in botany. See PHOENIX, N° 4.

(11.) PALM, WILD MALABAR. See ELATE, N° 1.

* *To* PALM. *v. a.* [from the noun.] 1. To conceal in the palm of the hand, as jugglers.—

Palming is held foul play amongſt gameſters.
Dryden.

They *palm'd* the trick that loſt the game. *Prior.*

2. To impoſe by fraud.—

You may *palm* upon us new for old. *Dryden.*

—Moll White has made the country ring with ſeveral imaginary exploits *palmed* upon her. *Addiſ.*

3. To handle.—Frank craves very ill, yet will *palm* all the meat. *Prior.* 4. To ſtroak with the hand. *Ainſworth.*

(1.) PALMA, an iſland in the Atlantic Ocean, and one of the Canaries, 36 miles NW. of Gomera, and about 75 in circumference. It abounds in wine and ſugar, and has a handſome town of the ſame name, which carries on a trade in wine to the Weſt Indies and other parts. Their beſt vines grow in a ſoil called the *Brenia*, where they make 12,000 butts of wine every year. which is well known by the name of *palm-wine* There are numbers of cattle, and all ſorts of fruits. In 1625 a volcano broke out in this iſland, with a moſt violent earthquake; the flame was ſeen for ſix weeks together, and a great quantity of aſhes were thrown as far as Teneriffe. It was conquered by the Spaniards in 1460. Lon. 17. 50. W Lat. 28. 37. N.

(2.) PALMA. See MAJORCA, N° 1.

(3, 4.) PALMA, two towns of Naples: 1. In Calabria Ultra, 11 miles WNW. of Oppido: 2. In Lavora, 14 miles E. of Capua.

(5.) PALMA, a town of Portugal in Alentejo, according to Brookes, or in Eſtremadura as Cruttwell has it, on the Cadaon; 18 miles E. of Setuval, and 20 E. of St Ubes. Lon. 8. 40. W. Lat. 38. 57. N.

(6.) PALMA, a ſea-port town of Sicily, in Mazara; ſix miles S. of Naro. It exports almonds and ſulphur.

(7.) PALMA, a town of Spain, in Cordova, on the Guadalquiver; 27 miles SW. of Cordova.

(8.) PALMA, a town of Terra Firma, in New Grenada, built in 1572; 50 miles NW. of Santa Fe. Lon. 73. 40. W. Lat. 4. 30. N.

(9.) PALMA CHRISTI, in botany. See RICINUS.

(10.) PALMA DI SOLO, a ſea-port town of Sardinia, on the S. coaſt; 15 miles SE. of Igleſias.

(11.) PALMA NUOVA, a very ſtrong town in Friuli. It was reckoned a very important place, for the defence of the Venetians againſt the Auſtrians and Turks; and was built in 1593, for that very purpoſe. They have cut a canal near this place, which is very advantageous. It is ſeated on the ſea-ſide, 10 miles SE. of Udino, and 55 NE. of Venice. It was taken by the French republicans, on the 18th March 1794. Lon. 13. 15. E. Lat. 46. 2. N.

(1.) PALMÆ, in botany, PALMS. Under this name Linnæus has arranged ſeveral genera, which, although capable of a place in ſeparate claſſes of his ſyſtem, he chooſes rather, on account of their ſingular ſtructure, to place apart in an appendix to the work.—See ARECA, CHAMÆROPS, COCOS, CORYPHA, and PHOENIX, &c. The ſame plants conſtitute one of the 7 families or tribes into which all vegetables are diſtributed by Linnæus in his *Philoſophia*

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Philoſophia Botanica. They are defined to be plants with ſimple ſtems, which at their ſummit bear leaves reſembling thoſe of the ferns, being a compoſition of a leaf and a branch; and whoſe flowers and fruit are produced on that particular receptacle or ſeat called a *ſpadix*, protruded from a common calyx in form of a ſheath or ſcabbard, termed by Linnæus *ſpatha*. See BOTANY, *Index*.

(2.) PALMÆ is likewiſe the name of the firſt order in Linnæus's Fragments of a Natural Method. See BOTANY, *Index*.

PALMARIA, two iſlands in the Mediterranean; 1. on the coaſt of Liguria, at the entrance of the Gulf of Spezza; 7½ miles S. of Spezza: 2. about 45 miles from the coaſt of Naples, and 3 miles W. of Ponza. Lon. 30. 31. E. Ferro. Lat. 40. 48. N.

PALMARIGI, a town of Naples, in Otranto; 3 miles WSW. of Otranto.

PALMARIS MUSCLES. See ANATOMY, § 213.

PALMARIUS'S POWDER. See MEDICINE, *Ind.*

PALMAROLA, an iſland near the coaſt of Italy, at the entrance of the Gulf of Piombino.

(1.) PALMAS, or PALMEZ, the capital of Gomera, one of the Canary Iſlands.

(2.) PALMAS, a river of N. America, formed by the union of ſeveral rivers. It is the S. boundary of New Leon, and runs into the Gulf of Mexico, 130 miles N. of Panuco: in Lon. 81. 10. W. Lat. 25. 0. N.

(3.) PALMAS, one of the Philippine Iſlands, 48 miles SE. of Mindanoa. Lon. 127. 0. E. Lat. 5. 33. N.

(4.) PALMAS, a river of N. America, in Tabaſco, which runs into the bay of Campeachy: in Lon. 86. 20. W. Lat. 18. 20. N.

(5.) PALMAS, CAPE, a promontory of Africa, on the Ivory Coaſt of Guinea. Lon. 5. 34. W. Lat. 4. 26. N.

PALMATA RADIX. See BOTANY, *Gloſſary*.

PALMATED, *part. adj.* ſomething reſembling the ſhape of the hand: thus we ſay, palmated leaves, roots, ſtones, &c.

PALMATI, in ornithology, a ſubdiviſion of the order of PALMIPEDES, in Mr Latham's Syſtem: Comprehending birds with full-webbed feet and ſhort legs.

PALME, a town of France, in the department of Aude; 6 miles NW. of Leucate.

PALMELA, a town of Portugal, in Eſtremadura; with a caſtle on a rock, on the Gadaon; 19 miles SE. of Liſbon. Lon. 0. 56. W. Lat. 38. 19. N.

* PALMER. *n. ſ.* [from *palm.*] A pilgrim: they who returned from the holy land carried branches of palm.—

My ſceptre, for a *palmer's* walking ſtaff. *Shak.*

Behold yon iſle, by *palmers*, pilgrims trod,
Men bearded, bald, cowl'd, uncowl'd, ſhod, unſhod. *Pope.*

PALMERSTON'S ISLANDS, a cluſter of iſlands in the Pacific Ocean, which Capt. Cook viſited in his ſecond and laſt voyages. (See COOK, N° III, § 8, 9.) There are 9 or 10 of them, connected by a reef of coral rocks, and lying in a circular direction. They have no anchorage, nor any inhabitants, though abounding with cocoa-nuts, ſcurvy-graſs, and the wharra tree. The chief iſland is not above a mile in circumference, and is not elevated more than 3 feet above the level of the ſea It conſiſts entirely of a coral ſand, with a mixture of blackiſh mould, which appeared to be produced from rotten vegetables. Lon. 196. 35. E. Lat. 18. 8. S.

PALMER-TOWN, a town of New York, 32 miles SW. of Ticonderago.

* PALMERWORM. *n. ſ.* [*palmer* and *worm.*] A worm covered with hair, ſuppoſed to be ſo called becauſe he wanders over all plants.—A fleſh fly, and one of thoſe hairy worms that reſemble caterpillars and are called *palmerworms*, being conveyed into one of our ſmall receivers, the bee and the fly lay with their bellies upward, and the worm ſeemed ſuddenly ſtruck dead. *Boyle.*

(1.) PALMETTO. *n. ſ.* A ſpecies of the palm-tree: It grows in the Weſt-Indies to be a very large tree; with the leaves the inhabitants thatch their houſes. Theſe leaves, before they are expanded, are cut and brought into England to make women's plaited hats; and the berries of theſe trees were formerly much uſed for buttons.—

Broad o'er my head the verdant cedars wave,
And high *palmettos* lift their graceful ſhade.
Thomſon.

(2.) PALMETTO, in botany. See CHAMÆROPS.

(3, 4.) PALMETTO, in geography, a town of St Chriſtopher's, on the bay ſo named, 3 miles W. of Baſſe Terre.

(5, 6.) PALMETTO POINT, two capes of Jamaica: 1. on the N. coaſt; in Lon. 76. 20. W. Lat. 18. 18. N. 2. on the S. coaſt; in Lon. 77. 57. W. Lat. 18. 7. N.

PALMEZ. See PALMAS, N° 1.

* PALMIFEROUS. *adj.* [*palma* and *fero*, Lat.] Bearing palms. *Dict.*

* PALMIPEDE. *adj.* [*palma* and *pes*, Latin.] Webfooted; having the toes joined by a membrane.—It is deſcribed like fiſſipedes, whereas it is *palmipede* or fin-footed like ſwans. *Brown's Vulgar Err.*—Water-fowls which are *palmipede*, are whole-footed, have very long necks, and yet but ſhort legs, as ſwans. *Ray.*

PALMIPEDES, in ornithology, the 3d order in Mr Latham's ſyſtem; comprehending *web-footed* birds; which that ingenious ornithologiſt found it neceſſary to introduce between Linnæus's orders of PICÆ and GRALLÆ, anſwering to the ANSERES of Linnæus. Mr Latham ſubdivided this order into two diviſions; viz. SEMIPALMATI and PALMATI, in which he is followed by Mr Kerr. The former have long legs, and their feet only *half-webbed*: the body is conical and ſomewhat flattened: the thighs are naked on their lower halves; the legs are very long; the feet are fitted for wading; and the toes are only connected together at their poſterior parts by a membrane. They moſtly pair in breeding time, and build their neſts on the ground. They feed on fiſh and inſects. This diviſion contains 3 genera. The latter have ſhort legs, a ſmooth bill, covered with a membranous ſkin, and increaſing in ſize towards the point. The feet are fitted for ſwimming, having ſhort legs, thin, or compreſſed laterally; and the toes are all compreſſed to their ends by an interpoſed membrane. They are moſtly polygamous; they build their neſts on the ground; they live much in the

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water, and the young are soon able to provide for themselves. There are 13 genera. See ORNITHOLOGY, *Sect.* IV. *Tab.* II. *Ord.* IX.

PALMIRA'S POINT, a cape of Indostan, on the coast of Orixa. Lon. 87. 5. E. Lat. 20. 45. N.

* PALMISTER. *n. s.* [from *palma.*] One who deals in palmistry *Dict.*

* PALMISTRY. *n. s.* [*palma*, Latin.] 1. The cheat of foretelling fortune by the lines of the palm. —We shall not query what truth is in *palmistry*, or divination from lines of our hands of high denomination. *Brown's Vulg. Err.*—

Here while his canting dron-pipe scan'd
The mystic figures of her hand,
He tipples *palmistry*, and dines
On all her fortune-telling lines. *Cleaveland.*
With the fond maids in *palmistry* he deals;
They tell the secret first which he reveals. *Prior.*

2. *Addison* uses it humorously for the action of the hand.—Going to relieve a common beggar, he found his pocket was picked; that being a kind of *palmistry* at which this vermin are very dexterous. *Spectator.*

PALMOLI, a town of Naples, in Abruzzo Citra; 13 miles ENE. of Civita Borella.

PALMS, ISLAND OF, a narrow island on the coast of Africa, in the Senegal, 6 miles long.

PALMUS, a long measure used both by the Greeks and Romans. The Grecian palmus called also Δωρεὰ, was of two sorts; the greater, which contained 9 finger-breadths, and the less which contained 4. The Roman Palmus was also of two sorts; the greater, which contained 12 finger-breadths, or 8½ inches English; and the less, which contained 4 finger-breadths, or near 3 inches English.—The great palmus was taken from the length of the hand or span; the less from the breadth of it. See MEASURE, § VII, 5, iii, iv.

* PALMY. *adj.* [from *palm.*] Bearing palms.—

In the most high and *palmy* state of Rome,
A little ere the mightiest Julius fell,
The graves stood tenantless. *Shak. Hamlet.*
She pass'd the region which Panchea join'd,
And flying left the *palmy* plains behind. *Dryden.*

(1, 1.) PALMYRA, a noble city of ancient Syria, now in ruins, supposed to have been the "TADMOR *in the wilderness*" built by Solomon, (1 Kings, ix, 18. 2. Chron. viii, 4. and Josephus, *Ant. Jud.* lib. 1.) though this is much controverted by many learned men. For the world have been long and justly astonished to find in the Desart of Syria, at a distance from the sea, with only a very precarious and scanty supply of water, and without a particular connection with any great monarchy, ruins of a city more extensive and splendid than Rome itself, the deposit of all the arts which Greece in its most flourishing periods could afford.

(2.) PALMYRA, ANCIENT HISTORY OF. Tadmor was situated where two hills converged, and beyond the point where they approached. These hills afforded water, and the aqueducts through which it was brought from them were discovered and described by Mr Wood. Though the other towns now in ruins afford some remains of luxury and opulence, yet in these respects they are much inferior to Palmyra. "The two springs of fresh water it possesses (says Volney, in his *Travels through Syria*, &c.) were a powerful inducement in a desart every where else so parched and barren. These, doubtless, were the principal motives which drew the attention of Solomon, and induced that commercial prince to carry his arms so remote from the limits of Judea." "He built strong walls there, (says the historian Josephus) to secure himself in the possession, and named it *Tadmor*, which signifies *the Place of Palm-trees.*" Hence it has been inferred that Solomon was its first founder; but we should, from this passage, rather conclude that it was already a place of known importance. The invasion of Tadmor by that prince throws a great light on the history of this city. The king of Jerusalem would never have carried his attention to so distant and detached a spot without some powerful motive of interest; and this interest could be no other than that of an extensive commerce, of which this place was already the emporium. This commerce extended itself to India, and the Persian Gulph was the principal point of union." From the nature of the commodities, from the requisite assistance of the Tyrians, and other forcible arguments, M. Volney shows that the Persian Gulph was the centre of the most ancient commerce of the eastern world; and that it was with a view of obtaining a shorter route, by the Euphrates, that Solomon turned his attention to Tadmor, distant but three days journey from it.

(3.) PALMYRA, HISTORY OF, TILL THE DEATH OF ODENATUS. "An ancient historian (says Volney,) who has informed us that Nabuchodonosor, before he laid siege to Jerusalem, took possession of Tadmor, clearly indicates that the latter city acted in concert with the two neighbouring capitals, Tyre and Jerusalem. Their gradual decline became, under the Persian empire and the successors of Alexander, the efficient cause of the sudden greatness of Palmyra in the time of the Parthians and Romans; she had then enjoyed a long peace for many centuries, which allowed her inhabitants to erect those monuments of opulence whose ruins we still admire." But there is no authentic history of Palmyra till after the captivity of the emperor Valerian by the Persians. It is first mentioned by the Roman historians, as a place which Mark Antony attempted to plunder, upon pretence that it had not observed a just neutrality between the Romans and Parthians. Pliny takes notice of it, as situated in a rich soil, among pleasant streams, and separated from the rest of the world by a vast sandy desart, which had preserved its independence between Parthia and Rome. There is still a considerable spot of good soil next the town and on the hills; and even in the wilderness, there were palms and fig-trees, some of which remained till the end of the 17th century, though none are now to be found. It enjoyed independency till the time of Trajan; who, having made himself master of almost all the Parthian empire, reduced Palmyra likewise, and it was afterwards accounted part of the Roman dominions. After the captivity of Valerian, it was become an opulent city, to which its situation in the vicinity of the Roman and Parthian empires greatly contributed; as the caravans, going to or returning from the East, frequented the place, and thus rendered it a considerable seat of merchandise. But when the defeat and captivity of Valerian

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rian had so much weakened the empire, that the Persians seemed to be in a fair way of becoming masters of all the eastern provinces, the Palmyrenians began to attempt recovering their liberty. Odenatus, prince of Palmyra, sent a polite letter to Sapor on his return, accompanied with considerable presents; but by that haughty conqueror his letter and embassy were treated with the most provoking contempt. The presents were thrown into the Euphrates; and to his letter Sapor replied, That his insolence in presuming to write to his lord was inexcusable; but if he could atone for it in any way, it would be by presenting himself before the throne bound hand and foot. Upon this Odenatus was so provoked, that he swore either to bring down the pride of the haughty conqueror, or die in the attempt. Accordingly, having assembled what forces he could, he fell upon the Persians, destroyed a great number of them, took a great part of their baggage, with Sapor's queen, and some of his concubines. But though the Persians were often vanquished, and the independency of Palmyra often established, Valerian was never released from his captivity, though Odenatus earnestly wished to rescue him from his enemies. Odenatus enjoyed his sovereignty but a short time; being murdered by his nephew, who was soon after put to death by Zenobia, the widow of Odenatus.

(4.) PALMYRA, HISTORY OF, TO ITS CONQUEST AND THE DEATH OF LONGINUS. ZENOBIA was possessed of very extraordinary endowments both of body and mind, being almost the only Asiatic woman who is recorded to have overcome the obstacles arising from the confined situation of the fair sex in that part of the world. Immediately on the murder of her husband, she assumed the government, avenged his death, and soon strengthened herself so much, that she resolved to submit neither to the Roman nor Persian power. Arabia, Armenia, and Persia, dreaded her enmity, and solicited her alliance. To the dominions of Odenatus, which extended from the Euphrates to the frontiers of Bithynia, she added the inheritance of her ancestors, the populous and fertile kingdom of Egypt. The emperor Claudius II. acknowledged her merit, and was content, that, while he pursued the Gothic war, she should enjoy the dignity of the empire in the east. The conduct, however, of Zenobia, was attended with some ambiguity. She blended with the popular manners of Roman princes the stately pomp of the courts of Asia, and exacted from her subjects the same adoration that was paid to the successors of Cyrus. She bestowed on her three sons a Roman education, and often showed them to the troops adorned with the imperial purple. For herself she reserved the diadem and title of *Queen of the East*. When Aurelian passed over into Asia, his presence restored obedience to Bithynia, already shaken by the arms of Zenobia. Advancing at the head of his legions, Ancyra submitted, and he was admitted into Tyana, after an obstinate siege, by the treachery of a perfidious citizen. The generous though fierce Aurelian abandoned the traitor to the rage of the soldiers: a superstitious reverence induced him to treat with lenity the countrymen of Apollonius the philosopher. Antioch was deserted on his approach; till he recalled the fugitives, and granted a general pardon to all who, from necessity, had fought for the Palmyrenian queen. The unexpected mildness of such conduct reconciled the Syrians, and, as far as the gates of Emesa, the people submitted to his arms. Zenobia however opposed the emperor's approach. The fate of the East was decided in two great battles; the first fought near Antioch, the second near Emesa. In both, the queen of Palmyra animated the armies by her presence, and devolved the execution of her orders on Zabdas, who had already signalized his military talents by the conquest of Egypt. The numerous forces of Zenobia consisted for the most part of light archers, and of heavy cavalry clothed in complete steel. The Mooriſh and Illyrian horse of Aurelian were unable to sustain the ponderous charge of their antagonists. They fled in real or affected disorder, engaged the Palmyrenians in a laborious pursuit, harassed them by a desultory combat, and at length discomfited this impenetrable body of cavalry. The infantry, when they had exhausted their quivers, remained exposed to the swords of the legions. After the defeat of Emesa, Zenobia found it impossible to collect a third army. As far as the frontier of Egypt, the nations subject to her empire had joined the standard of the conqueror. Palmyra was her last resource. She retired within its walls; made every preparation for a vigorous resistance; and declared, with the intrepidity of a heroine, that the last moment of her reign and of her life should be the same. In his march over the sandy desert, between Emesa and Palmyra, Aurelian was perpetually harassed by the Arabs; nor could he always defend his army, and especially his baggage, from those flying troops of daring robbers. The siege of Palmyra was an object far more difficult and important: and the emperor, who with incessant vigour pressed the attacks in person, was himself wounded with a dart. "The Roman people, (says Aurelian, in an original letter), speak with contempt of the war which I am waging against a *woman*. They are ignorant both of the character and of the power of Zenobia. It is impossible to enumerate her warlike preparations, of stones, of arrows, and of every species of missile weapons. Every part of the walls is provided with two or three balistæ, and artificial fires are thrown from her military engines," &c. Aurelian at last judged it prudent to offer terms of an advantageous capitulation: to the queen, a splendid retreat; to the citizens, their ancient privileges. His proposals were obstinately rejected. ZENOBIA hoped, that in a short time famine would compel the Roman army to repass the desert; and that the kings of the East, particularly the Persian monarch, would arm in the defence of their natural ally. But the death of Sapor distracted the councils of Persia; and the inconsiderable succours that attempted to relieve Palmyra were easily intercepted. The Roman camp was increased by the return of Probus with his victorious troops from the conquest of Egypt. It was then that Zenobia resolved to fly. She mounted the fleetest of her dromedaries; and had reached the banks of the Euphrates, about 60 miles from Palmyra, when she was overtaken by Aurelian's

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Aurelian's light horſe, ſeized, and brought back a captive. Her capital ſoon after ſurrendered, and was treated with unexpected lenity. When the Syrian queen was brought into the preſence of Aurelian, he ſternly aſked her, How ſhe had preſumed to riſe in arms againſt the emperors of Rome? The anſwer of Zenobia was a prudent mixture of reſpect and firmneſs: "Becauſe I diſdained to conſider as Roman emperors an Aureolus or a Gallienus. You alone I acknowledge as my conqueror and my ſovereign." But the courage of Zenobia deſerted her in the hour of trial; ſhe trembled at the clamours of the ſoldiers, who called aloud for her immediate execution; forgot the generous deſpair of Cleopatra, which ſhe had propoſed as her model, and ignominiouſly purchaſed life by the ſacrifice of her fame and her friends. It was to their councils, which governed the weakneſs of her ſex, that ſhe imputed the guilt of her obſtinate reſiſtance; it was on their heads that ſhe directed the vengeance of the cruel Aurelian. The fame of LONGINUS, who was included among the numerous and perhaps innocent victims of her fear, will ſurvive that of the queen who betrayed, or the tyrant who condemned him. Genius and learning were incapable of moving a fierce unlettered ſoldier, but they had ſerved to elevate and harmonize the ſoul of Longinus. Without uttering a complaint, he calmly followed the executioner, pitying his unhappy miſtreſs, and comforting his afflicted friends.

(5.) PALMYRA, HISTORY OF, TO THE 12TH CENTURY. Returning from the conqueſt of the Eaſt, Aurelian had already croſſed the ſtraits which divide Europe from Aſia, when he was provoked by the intelligence, that the Palmyrenians had maſſacred the governor and garriſon which he had left among them, and erected the ſtandard of revolt. Without delay, he once more turned towards Syria. Antioch was alarmed by his rapid approach, and the helpleſs city of Palmyra felt the irreſiſtible weight of his reſentment. We have a letter of Aurelian himſelf, in which he acknowledges, that old men, women, children, and peaſants, had been involved in that dreadful execution which ſhould have been confined to armed rebellion: and although his principal concern ſeems directed to the re-eſtabliſhment of a temple of the ſun, he diſcovers ſome pity for the remnant of the Palmyrenians, to whom he grants the permiſſion of rebuilding and inhabiting their city. But it is eaſier to deſtroy than to reſtore. The ſeat of commerce, of arts, and of Zenobia, gradually ſunk into an obſcure town, a trifling fortreſs, and at length a miſerable village. Little is known concerning the fortunes of Palmyra ſince the time of Mahomet, except that it was conſidered as a place of ſtrength; and that in the 12th century there were 2000 Jews in it.

(6.) PALMYRA, INHABITANTS, DESOLATION, &c. OF. The company with whom Mr Wood, the publiſher of *the Ruins of Palmyra*, travelled, arrived at the end of the plain, where a ridge of barren hills, by which it was divided on the right and left, ſeemed to meet; between them there was a vale, through which an aqueduct formerly conveyed water to Palmyra. On each ſide of this vale they remarked ſeveral ſepulchres of the ancient Palmyrenes, which they had ſcarce paſſed, when the hills opening on a ſudden, they diſcovered ſuch piles of ruins as they had never ſeen. They were all of white marble; and beyond them, towards the Euphrates, was a wide level, ſtretching farther than the eye could reach, totally deſolate, and without bounds. After having gazed ſome time upon this proſpect, which rather exceeded than fell ſhort of their expectations, they were conducted to one of the huts of the Arabs, of which there were about 30 in the court of the great temple. The inhabitants of both ſexes were well ſhaped, and the women, though very ſwarthy, had good features. They were veiled, but did not ſo ſcrupulouſly conceal their faces as the eaſtern women generally do. They paint the ends of their fingers red, their lips blue, and their eyebrows and eye-laſhes black. They had large rings of gold or braſs in their ears and noſtrils.

(7.) PALMYRA, RUINS OF. Theſe celebrated ruins conſiſt of temples, palaces, and porticoes of Grecian architecture; and lie ſcattered over an extent of ſeveral miles. They were accidentally diſcovered by ſome Engliſh travellers from Aleppo above a century ago. The moſt remarkable of them is the temple of the Sun, of which the ruins are ſpread over a ſquare of 220 yards. It was encompaſſed with a ſtately wall, built of large ſquare ſtones, and adorned with pilaſters within and without, to the number of 62 on a ſide. Within the court are the remains of two rows of noble marble pillars 37 feet high, with their capitals of moſt exquiſite workmanſhip. Of theſe only 58 remain entire, but they appear to have gone round the whole court, and to have ſupported a double piazza. The walks oppoſite the caſtle appear to have been ſpacious. At each end of this line are two niches for ſtatues, with their pedeſtals, borders, ſupporters, and canopies, carved with the utmoſt propriety and elegance. The ſpace within this incloſure ſeems to have been an open court, in the middle of which ſtood the temple encompaſſed with another row of pillars of a different order, and much taller, being 50 feet high; but of theſe 16 only remain. The whole ſpace contained within theſe pillars is 59 yards in length, and near 28 in breadth. The temple is 33 yards long, and 13 or 14 broad. It points N. and S. and exactly in the middle of the building, on the W. ſide, is a moſt magnificent entry, on the remains of which are ſome vines and cluſters of grapes, carved in the moſt maſterly imitation of nature that can be conceived. Juſt over the door are diſcerned a pair of wings, which extend its whole breadth; but the body, whether of an eagle or an angel, is deſtroyed. The N. end of this temple is adorned with the moſt curious fret-work and bas-relief; and in the middle there is a dome or cupola about ten feet diameter. North of this place is an obeliſk, conſiſting of 7 large ſtones, beſides its capital. It is about 50 feet high; and, juſt above the pedeſtal, is 12 feet in circumference. About a quarter of a mile from this pillar, to the E. and W. are two others, beſides the fragment of a third. About 100 paces from the middle obeliſk is a magnificent entry to a piazza, which is 40 feet broad, and more than half a mile long, incloſed with two rows of marble

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marble pillars 26 feet high, and 8 or 9 in compaſs. Of theſe there ſtill remain 129, but there muſt originally have been no leſs than 560 The upper end of the piazza was cloſed by a row of pillars. To the left are the ruins of a ſtately banqueting-houſe, built of better marble, and finiſhed with yet greater elegance, than the piazza. The pillars which ſupported it were of one entire ſtone. It meaſures 22 feet in length, and in compaſs 8 feet 9 inches. In the W. ſide of the piazza are ſeveral apertures for gates into the court of the palace. Each of theſe were adorned with 4 porphyry pillars, placed by couples in the front of the gate facing the palace, two on each ſide. Two of theſe only remain entire. They are 30 feet long, and 9 in circumference. On the E. ſide of the piazza ſtands a great number of marble pillars, ſome perfect, but the greater part mutilated. At a little diſtance are the remains of a ſmall temple, without a roof. Before the entry, which looks to the S. is a piazza ſupported by ſix pillars, two on each ſide of the door, and one at each end. The pedeſtals of thoſe in front have been filled with inſcriptions, both in the Greek and Palmyrene languages, which are become totally illegible. Among theſe ruins are many ſepulchres. They are all ſquare towers, 4 or 5 ſtories high. There is a walk acroſs the whole building, the ſpace on each hand is ſubdivided into ſix partitions by thick walls. The ſpace between the partitions is wide enough to receive the largeſt corpſe; and in theſe niches there are 6 or 7 piled upon one another. Many inſcriptions have been found at Palmyra, which have occupied much of the attention of the learned. See *Barthelemy's Reflections on the Palmyrene Alphabet*, publiſhed at Paris in 1754; *An Explication of the Inſcriptions at Palmyra hitherto publiſhed*, by John Swinton of Chriſt-church, Oxford. *Phil. Trans.* N° 217 and 218; *Ancient Univerſal Hiſtory*, Vol. 1. and, above all, the *Ruins of Palmyra, or Tadmor in the Deſart*, publiſhed by Mr R. Wood, who, with M. Bouverie and Mr Dawkins, travelled thither in 1751. The reſult of their obſervations was publiſhed in 1753, in the form of an atlas. The ruins of this once mighty and celebrated city are repreſented in 57 copperplates, 16 by 12 inches, printed on imperial paper. They are admirably executed; Palmyra was viſited by Mr Bruce, before his journey into Abyſſinia. Before he came in ſight of the ruins, he aſcended a hill of white gritty ſtone, in a very narrow winding road; but on getting up to the top, he was ſtruck with the moſt ſtupendous ſight which, he believes, ever mortal ſaw. The whole plain below, which is very extenſive, was ſo covered with magnificent buildings, that they ſeemed to touch one another. All of them are finely proportioned, and compoſed of white ſtones, which at that diſtance appeared like marble.

(8.) PALMYRA, TRADE, &c. OF. In the neighbourhood of Palymra are ſome ſalt-marſhes; and to the adjacent country a trade is carried on in kelp from Tripoli in Syria. Reſpecting the latitude and longitude there are various opinions. Before Mr Bruce left Palmyra, he obſerved its latitude with a reflecting quadrant of Hadley, but as the inſtrument was out of order, he could not determine it exactly. In his opinion, however, 33° 58′ is the Lat. From ſuch obſervations as he could make on the longitude, he concluded it to be 37° 9′ E. of Greenwich. Mr R. Wood makes the latitude 34° N. That which appears to be neareſt the truth is Lon. 38. 50. E. Lat. 33. 20. N. It ſtands about 50 leagues SE. of Aleppo, as much from Damaſcus, and 20 leagues W. of the Euphrates.

(II.) PALMYRA, a town and port of entry, in Teneſſee.

PALMYRENES, or PALMYRENIANS, } the natives of PALMYRA. See that article, N° I. § 6.

PALNA, a town of Bohemia, in Czaſlau.

PALNAUD, a diſtrict of Indoſtan, in the Carnatic, on the S. bank of the Kiſtnah, 70 miles long and 15 broad, between Golconda and Guntoor. Zimerycotta is the capital.

(1.) PALO, a town of Naples, in Bari.

(2.) PALO, a cape of Albania, 6 miles NW. of Durazzo.

(3.) PALO, a town of Italy, in Patrimonio, on the coaſt, with a ſtrong caſtle, 13 miles WNW. of Rome.

PALOCZA, a town of Hungary, 11 miles E. of Szeben.

PALOMAR, a town of Spain, in Arragon.

PALOMBARA, a town of Naples, in Lavora, 5 miles NE. of Capua.

PALOMERA, a ſea-port of Majorca, on the NE. coaſt.

PALOMINOS, a cluſter of iſlands of S. America, on the coaſt of Peru, 3 miles W. of St Lorenzo.

(1.) PALOS, a town of Spain, in Andaluſia, with a good harbour; famous for being the part from which the celebrated COLUMBUS ſet ſail on his firſt adventurous voyage, in ſearch of the new world, in 1492. It is ſeated at the mouth of the Tinto, 46 miles SW. of Seville. Lon. 6. 39. W. Lat. 37. 14. N.

(2.) PALOS, a town of Spain, in Murcia, N. of the Cape (N° 3.), 20 miles E. of Carthagena. Lon. 6. 39. W. Lat. 37. 37. N.

(3.) PALOS, CAPE, a promontory of Spain, in Murcia, S. of the above town (N° 2.), between the Bay of Carthagena and that of Alicant.

PALOTA, or PALOTTA, } a town of Lower Hungary, in Alba Regalis, fortified with a high wall and a moat. In 1565, it was beſieged by the Turks, without ſucceſs, but in 1593 they took it. In 1687, it was retaken by the emperor. It is 40 miles SW. of Buda. Lon. 18. 0. E. Lat. 47. 0. N.

PALOTZA, a town of Hungary, on the Poprat; 54 miles N. of Cachau, and 112 NNW. of Zatma.

* PALPABILITY. *n. ſ.* [from *palpable*.] Quality of being perceivable to the touch.—He firſt found out *palpability* of colours. *Mart. Scribleru*s.

(1.) * PALPABLE. *adj.* [*palpable*, Fr. *palpor*, Lat.] 1. Perceptible by the touch.—

I ſee thee yet in form as *palpable*
As this which now I draw. *Shak.*

Darkneſs muſt overſhadow all his bounds,
Palpable darkneſs! and blot out three days.
Milton.

2. Groſs

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2. Groſs; coarſe; eaſily detected.—That groſſer kind of heatheniſh idolatry whereby they worſhipped the very works of their own hands, was an abſurdity to reaſon ſo *palpable*, that the prophet David, comparing idols and idolaters together, maketh almoſt no odds between them. *Hooker.* —They grant we err not in *palpable* manner. *Hooker.*—He muſt not think to ſhelter himſelf from ſo *palpable* an abſurdity by this impertinent diſtinction. *Tillotſon.*—Having no ſurer guide, it was no wonder that they fell into groſs and *palpable* miſtakes. *Woodward.* 3. Plain; eaſily perceptible.—That they all have ſo teſtified, I ſee not how we ſhould poſſibly wiſh a proof more *palpable*, than this manifeſtly received and everywhere continued cuſtom of reading them publickly. *Hooker.* —They would no longer be content with the inviſible monarchy of God, and God diſmiſſed them to the *palpable* dominion of Saul. *Holyday.*—Since there is ſo much diſſimilitude between cauſe and effect in the more *palpable* phænomena, we can expect no leſs between them and their inviſible efficients. *Glanville.*

* PALPABLENESS. *n. ſ.* [from *palpable.*] Quality of being palpable; plainneſs; groſſneſs.

* PALPABLY. *adv.* [from *palpable.*] 1. In ſuch a manner as to be perceived by the touch. 2. Groſsly; plainly.—Clodius was acquitted by a corrupt jury, that had *palpably* taken ſhares of money. *Bacon.*

* PALPATION. *n. ſ.* [*palpatio*, *palpor*, Lat.] The act of feeling.

* PALPITATE. *v. a.* [*palpito*, Latin; *palpiter*, French.] To beat at the heart; to flutter; to go *pit-a-pat.*

(1.) * PALPITATION. *n. ſ.* [*palpitation*, Fr. from *palpitate.*] Beating or panting: that alteration in the pulſe of the heart, upon frights or any other cauſes, which makes it felt: for a natural uniform pulſe goes on without diſtinction.—The heart ſtrikes 500 ſort of pulſes in an hour; and hunted into ſuch continual *palpitations*, through anxiety and diſtraction, that fain would it break. *Harvey.*—I knew the good company too well to feel any *palpitations* at their approach. *Tatler.*—Anxiety and *palpitations* of the heart, are a ſign of weak fibres. *Arbuthnot.*—

Her boſom heaves
With *palpitations* wild. *Thomſon.*

(2.) PALPITATION OF THE HEART. See MEDICINE, *Index.*

(1.) PALSGRAVE, John, a learned writer, who flouriſhed in the reigns of Henry VII. and Henry VIII. He received his grammatical learning at London, his native place. He ſtudied logic and philoſophy at Cambridge, where he became A. B. after which he went to Paris, where he ſpent ſeveral years in ſtudy, took the degree of A. M. and acquired ſuch excellence in the French tongue, that in 1514, when a treaty of marriage was negociated between Lewis XII. of France, and the princeſs Mary, ſiſter of Henry VIII. of England, Mr Palſgrave was appointed to be tutor in that language. But Lewis XII. dying ſoon after his marriage, Palſgrave attended his fair pupil back to England, where he taught French to the young nobility, obtained preferment in the church, and was appointed one of the king's chaplains in ordinary. In 1531 he ſettled at Oxford, and in 1532 was made A. M. and B. D. He was much eſteemed for his learning; and though an Engliſhman, was the firſt who reduced the French tongue to grammatical rules, or fixed it to any kind of ſtandard. This he executed with great ingenuity, in a large work which he publiſhed in that language at London, entitled *L'Eclairciſſement de la Langue Françoiſe*, in 3 books, thick folio, 1530, with a large Engliſh introduction; ſo that the French nation ſtand originally indebted to England for that univerſality which their language at preſent poſſeſſes. He tranſlated into Engliſh a Latin comedy called *Acolaſtus*, written by one William Fullonius, an author then living at Hagen in Holland. He died in 1540.

(2.) * PALSGRAVE. *n. ſ.* [*paltſgroff*, German.] A count or earl who has the overſeeing of a prince's palace. *Dict.*

(3.) PALSGRAVE. See PALATINATE, § 3.

* PALSICAL. *adj.* [from *palſy.*] Afflicted with the palſy; paralytick.—

* PALSIED. *adj.* [from *palſy.*] Diſeaſed with a palſy.—

Pall'd, thy blazed youth
Becomes aſſuaged, and doth beg the alms
Of *palſied* eld. *Shak.*

—Though ſhe breathes in a few pious peaceful ſouls, like a *palſied* perſon, ſhe ſcarce moves a limb. *Decay of Piety.*—

Let not old age long ſtretch his *palſy'd* hand,
Thoſe who give late are importun'd each day. *Gay.*

(1.) * PALSY. *n. ſ.* [*paralyſis*, Lat. thence *paralyly*, *paraſy*, *palaſy*, *palſy.*] A privation of motion or feeling, or both, proceeding from ſome cauſe below the cerebellum, joined with a coldneſs, flaccidity, and at laſt waſting of the parts. If this privation be in all the parts below the head except the thorax and heart, it is called a paraplegia; if in one ſide only, a hemiplegia; if in ſome parts only of one ſide, a paralyſis. There is a threefold diviſion of a *palſy*; a privation of motion, ſenſation remaining; a privation of ſenſation, motion remaining; and laſtly, a privation of both together. *Quincy.*—

The *palſy*, and not fear, provokes me. *Shak.* —A *palſy* may as well ſhake an oak, as ſhake the delight of conſcience. *South.*

(2.) PALSY. See MEDICINE, *Index.*

PALTA, or PALTE. See JAMDRO.

(1.) * *To* PALTER. *v. n.* [from *paltron*, *Skinner.*] To ſhift; to dodge; to play tricks. Not in uſe.

I muſt
To the young man ſend humble treaties,
And *palter* in the ſhift of lowneſs. *Shak.*
Be theſe juggling fiends no more believ'd,
That *palter* with us in a double ſenſe. *Shak.*
Romans, that have ſpoke the word,
And will not *palter.* *Shak.*

(2.) * *To* PALTER. *v. a.* To ſquander: as, he *palters* his fortune. *Ainſworth.*

PALTERCAMP, a town of Germany, in Oſnaburg, 14 miles SSE. of Oſnaburg.

* PALTERER. *n. ſ.* [from *palter.*] An inſincere dealer; a ſhifter.

* PALTRINESS. *n. ſ.* [from *paltry.*] The ſtate of being paltry.

* PALTRY. *adj.* [*poltron*, French, a ſcoundrel; *paltroco*,

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paltroco, a low whore, Italian.] Sorry; worthleſs; deſpicable; contemptible; mean.—

Then turn your forces from this *paltry* ſiege. *Shak.*

—A very diſhoneſt *paltry* boy, as appears in leaving his friend here in neceſſity, and denying him. *Shak.*—

Whoſe compoſt is *paltry* and carried too late. *Tuſſer.*

For knights are bound to feel no blows,
From *paltry* and unequal foes. *Hudibras.*

—It is an ill habit to ſquander away our wiſhes upon *paltry* fooleries. *L'Eſtrange.*—

When ſuch *paltry* ſlaves preſume
To mix in treaſon, if the plot ſucceeds,
They're thrown neglected by; but if it fails,
They're ſure to die like dogs. *Addiſon.*

PALTZ, a townſhip of New York, in Ulſter county, on the W. bank of Hudſon's River, 20 miles NW. of Newburgh. It had 2007 citizens, and 302 ſlaves in 1795.

PALUD, a town of France, in the dep. of Drome; 12 miles NNW. of Orange, and 15 S. of Montelimart.

PALUDA, a town of Aſiatic Turkey, in Erzerum, near the Euphrates, inhabited by Mahometans and Chriſtians. The Armenian characters were invented in it. Lon. 39. 25. E. Lat. 38. 35. N.

PALUDAMENTUM, in Roman antiquity, a habit that differed but little from the CHLAMYS, except that this laſt belonged chiefly to the lower claſs of people. It was worn by the officers and principal men among the Romans in time of war, who are therefore called PALUDATI; diſtinguiſhed them from the common ſoldiers, who, becauſe they wore the *ſagum*, were called SAGATI. The paludamentum came down only to the navel, was open on the ſides, had ſhort ſleeves reſembling angels wings, and was generally white or red. It is alſo uſed to ſignify the common ſoldier's coat.

PALUDATI. See laſt article.

PALVERETO, a town of Naples, in Calabria Citra; 10 miles ENE. of Coſenza.

PALUS MEOTIS. See MÆOTIS PALUS.

(1.) * PALY. *adj.* [from *pale.*] Pale. Uſed only in poetry.—

Fain would I go to chaſe his *paly* lips,
With twenty thouſand kiſſes. *Shak.*

Fire anſwers fire, and through their *paly* flames
Each battle ſees the others umber'd face. *Shak.*

A dim gleam the *paly* lanthorn throws
O'er the mid pavement. *Gay.*

(2.) PALY, or PALE, in heraldry, is when the ſhield is divided into four or more equal parts, by perpendicular lines falling from the top to the bottom.

(3.) PALY BENDE, is when the eſcutcheon is divided by perpendicular lines, which is *paly*; and alſo by diagonals, which is called *bendy*.

PALZGRAVE. See PALATINATE, § 3; and PALSGRAVE.

* PAM. *n. ſ.* [probably from *palm*, victory; as *trump* from *triumph*.] The knave of clubs.—

Ev'n mighty *pam* that kings and queens o'erthrew,
And mow'd down armies in the fights of lu. *Pope.*

PAMAKASSAN, a town on the N. coaſt of the iſland of Madura, in the E. Indian Ocean.

PAMANOKAN, a town on the N. coaſt of Java; 70 miles E. of Batavia.

PAMBAMACCA, a lofty mountain of Quito, one of the Peaks of the E. Cordilleras.

PAMBOUK, the Turkiſh name of the ruined city of Hierapolis. See HIERAPOLIS.

PAMBU, a town of Thibet, 33 miles ENE. of Tankia.

PAMELAN, or PAMELE, a town of France, in the department of the Dyle, and ci-devant prov. of Auſtrian Brabant, on the Dender; 7 miles S. of Aloſt.

PAMELIUS, James, a Flemiſh divine, the ſon of Adolphus, counſellor of ſtate to Charles V. born at Bruges, in 1536. He was canon of Bruges; and Philip II. appointed him biſhop of St Omer; but in going to take poſſeſſion of his epiſcopate, he died at Mons. He wrote ſeveral works; of which the chief is, his Notes upon Tertullian and Cyprian.

PAMENENGO, a town of Italy, in the dep. of the Upper Po, diſtrict and late duchy of Cremona; on a canal which connects the Po and the Oglio.

PAMER, a lake of Pruſſia, 12 m. W. of Lick.

PAMIERS, a town of France, in the dep. of the Arriege, and late territory of Foix; ſeated on the Arriege near a mineral ſpring, famous for curing the gout and obſtructions: 8 miles N. of Foix, and 30 S. of Toulouſe. Lon. 1. 32. E. Lat. 32. 8. N.

(1.) PAMLICO, or TAR RIVER, a large river of N. Carolina, which riſes in Caſwell county, and running SE. through Granville, Franklin, Naſh, and Edgcombe counties, and paſſing Waſhington, Tarborough, and Greenville, falls into Pamlico Sound. It is navigable for 40 miles by veſſels drawing 9 feet water; and in flats for 90 miles above its mouth; which lies in Lon. 76. 42. W. Lat. 35. 25. N.

(2.) PAMLICO SOUND, a large lake, or inland ſea, of N. Carolina; 86 miles long from Roanoke to Crane iſland, and from 10 to 30 broad. In its whole length it is ſeparated from the ſea by a ſand beach ſcarcely a mile broad, but covered with trees and buſhes. Through this beach are 3 inlets; the chief one, *Ocracoke*, admits veſſels drawing 10 feet water; and opens into the Sound, between Portſmouth and Ocracoke, in Lat. 34. 54.

PAMMIN, a town of Brandenburg.

PAMOACAN, a town in the iſle of Borneo.

PAMONA. See POMONA, N° 2.

PAMPANGAN, a town of Luçon, the chief of the MANILLAS, and capital of a populous and extenſive province, the natives of which have adopted the religion and manners of the Spaniards. It is ſeated on the E. coaſt. Lat. 15. 5. N.

PAMPEL, a town of Courland.

PAMPELONNE, a town of France, in the dep. of Tarn, and ci-devant prov. of Languedoc; 15 miles N. of Alby, and 21 NE. of Gaillac.

(1.) PAMPELUNA, the capital of the kingdom of Navarre in Spain, with a very ſtrong citadel and rich biſhopric. It is handſome and populous, carries on a great trade, and is ſeated in a very fertile plain. Lon. 1. 25. E. Lat. 42. 42. N.

(2.) PAMPELUNA, a town of New Granada in South America, famous for its gold mines and

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numerous flocks of ſheep. Lon. 68. 30. W. Lat. 6. 30. N.

* *To* PAMPER. *v. a.* [*pamperare*, Italian.] To glut; to fill with food; to ſatiate; to feed luxuriouſly.—It was even as two phyſicians ſhould take one ſick body in hand, of which the former would miniſter all things meet to purge and keep under the body, the other to *pamper* and ſtrengthen it ſuddenly again. *Spenſer.*—

You are more intemperate in your blood
Than Venus, or thoſe *pamper'd* animals
That rage in ſavage ſenſuality. *Shak.*

—They are contented as well with mean food, as thoſe that, with the rarities of the earth, do *pamper* their voracities. *Sandys.*—Praiſe brought thee to feed upon the air, and to ſtarve thy ſoul, only to *pamper* thy imagination. *South.*

Diſtend his chine and *pamper* him for ſport.
Dryden.

His lordſhip lolls within at eaſe,
Pamp'ring his paunch with foreign rarities.
Dryden.

To *pamper'd* inſolence devoted fall. *Pope.*

PAMPHILUS, a celebrated painter of Macedonia, in the age of Philip II. He was founder of the ſchool for painting at Sicyon; and he made a law which was obſerved not only in Sicyon, but all over Greece, that none but the children of noble and dignified perſons ſhould be permitted to learn painting. Apelles was one of his pupils.

* PAMPHLET. *n. ſ.* [*par un filet*, Fr. Whence this word is written anciently, and by *Caxton paunflet.*] A ſmall book; probably a book ſold unbound, and only ſtitched.—

Com'ſt thou with deep premeditated lines,
With written *pamphlets* ſtudiouſly devis'd? *Shak.*

—I put forth a ſlight *pamphlet* about the elements of architecture. *Wotton.*—I have been reading many Engliſh *pamphlets* and tractates of the ſabbath. *White.*—He could not, without ſome tax upon himſelf and his miniſters, for the not executing the laws, look upon the bold licence of ſome in printing *pamphlets*. *Clarendon.*—

While all is calm, his arguments prevail,
'Till pow'r diſcharging all her ſtormy bags,
Flutters the feeble *pamphlet* into rags. *Swift.*

* *To* PAMPHLET. *v. n.* [from the noun.] To write ſmall books.—Something I have done, tho' in a poor *pamphleting* way. *Howel.*

* PAMPHLETEER. *n. ſ.* [from *pamphlet.*] A ſcribbler of ſmall books.—The ſquibs are thoſe who, in the common phraſe, are called libellers, lampooners, and *pamphleteers*. *Tatler.*—With great injuſtice I have been pelted by *pamphleteers*. *Swift.*

PAMPHOS, a Greek poet who lived before Heſiod. *Lempriere.*

PAMPHUGI, an ancient people of Ethiopia. See ETHIOPIA, § 3.

PAMPHYLA, an ancient Grecian authoreſs, who flouriſhed in Nero's reign, and wrote a general hiſtory, in 33 books, much commended by the ancients, but not extant.

PAMPHYLIA, the ancient name of a country of Natolia, in Aſia, now called CARAMANIA and *Cay bay*, between Lycia and Cilicia, on the S. coaſt. N. of the Mediterranean. Its firſt name was *Mopſopia*.

PAMPHYLIUS. See PAMPHILUS.

PAMPLONA. See PAMPELUNA, N° 1. and 2.

PAMPROU, a town of France, in the dep. of the two Sevres; 9 miles SE. of St Maixant.

PAMUNKY, a navigable river of Virginia, formed by the union of the N. and S. Anna; and which runs SE. paſſes Hanover and Newcaſtle, and joining the Mattapany, forms YORK river.

(1.) PAN, in mythology, the god of ſhepherds, hunters, and all country exerciſes. In Egypt he was named *Mendes*, which, according to Jablonſki, ſignifies *fecundity*. Hence his cymbal was a he-goat, the moſt fallacious of all animals. His principal temple was a magnificent building in a city of lower Egypt, called after his name, where was kept a *he-goat*, to whom ſacrifices of a very monſtrous kind were offered. Homer makes him the ſon of Mercury, and ſays he was called *Pan* from πας, *omne*, *all*, becauſe he charmed *all* the gods with his flute; others ſay that he was the ſon of Demogorgon, and firſt invented the organ, of ſeven unequal reeds, joined together in a particular manner. Having on a time fought with Cupid, that god in ſpite made him fall in love with the coy nymph Syrinx, who, flying from him to the banks of Ladon, a river of Arcadia, at the inſtant prayers of the Nymphs, was turned into a reed, as her name in Greek ſignifies, which the god graſping inſtead of her, made a pipe of it, and for his muſic, was adored by the Arcadians. The moſt common opinion was, that he was the ſon of Mercury and Penelope. He was by no means diſpleaſing to the nymphs, who are generally drawn dancing round about him to hear his pipe. The goddeſs Luna, and the nymphs, cut the moſt diſtinguiſhed figure in the hiſtory of his amours. The uſual offerings made him, were milk and honey, in ſhepherds wooden bowls; alſo they ſacrificed to him a dog, the wolf's enemy; whence his uſual epithet is λυκαιος; and whence alſo his prieſts were called *Luperci*. His feſtival brought into Italy by Evander the Arcadian, and revived afterwards by Romulus, in memory of his preſerver, was celebrated by the Romans on the 15th February. He was alſo called by them INUUS, ab *inuendo*. See Liv. l. 5. Macrob. Sat. I. 22. and Serv. in Virg. Æn. VI. 775. The ancients, by giving ſo many adjuncts and attributes to this idol, ſeem to have deſigned him for the ſymbol of the univerſe; his upper parts being human, becauſe the upper part of the world is fair, beautiful, ſmiling like his face; his horns ſymbolize the rays of the ſun and of the moon; his red face, the ſplendor of the ſky; the ſpotted ſkin wherewith he is clothed, the ſtars which beſpangle the firmament; the roughneſs of his lower parts, beaſts and vegetables; his goat's feet, the ſolidity of the earth; his pipe, compact of 7 reeds, the 7 planets, which they ſay make the harmony of the ſpheres: his crook, bending round at the top, the years circling in one another. *Serv. Interpr.* Such is the Pan of the poets, but among the Egyptians, as Mendes, and by the earlier Greeks, he was worſhipped in a much higher character: as the ſoul of the univerſe, the whole ſyſtem of things, animated and eternal.

(2.) PAN, in geography, a town of China, of the 3d rank, in the province of Se-tchuen.

(3, 4.) PAN, or PAHAN, a town of Malacca, capital

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pital of a kingdom ſo named, remarkable for abounding with elephants, and producing great quantities of pepper.

(5.) PAN, a town of Wight in Eaſt Medina.

(6.) * PAN. *n. ſ.* [*panne*, Saxon.] 1. A veſſel broad and ſhallow, in which proviſions are dreſſed or kept.—Theſe were but to leap out of the *pan* into the fire. *Spenſer.*—

The pliant is braſs is laid
On anvils, and of heads and limbs are made
Pans, cans. *Dryden.*

2. The part of the lock of the gun that holds the powder.—Our attempts to fire the gun-powder in the *pan* of the piſtol, ſucceeded not. *Boyle.*

3. Any thing hollow: as the brain *pan.*

* *To* PAN. *n. ſ.* an old word, denoting to cloſe or join together. *Ainſworth.*

PANA, an iſland on the coaſt of Peru, 21 m. ENE. of Santa Clara, and 21 from Guayaquil.

PANACA, a volcano on the W. coaſt of New Mexico, 9 miles from that of Sanſonate.

(1.) * PANACEA. *n. ſ.* [*penacée*, Fr. πανακεια.] An univerſal medicine.

(2.) *A* PANACEA, or a remedy for all diſeaſes, is a thing impoſſible to be obtained.

(3.) * PANACEA. *n. ſ.* An herb.

(4.) PANACEA, in botany. See PANAX.

(5.) PANACEA, in mythology, the daughter of Æſculapius, a goddeſs who preſided over health. *Lucan* ix. 918.

(1.) * PANADA. } *n. ſ.* [from *panis*, bread.]
(1.) * PANADO. } Food made by boiling bread in water.—Their diet ought to be very ſparing; gruels, *panados*, and chicken broth. *Wiſeman.*

(2.) PANADO is boiled to the conſiſtence of pulp, and ſweetened with ſugar.

PANÆTIUS, a ſtoic philoſopher of Rhodes, who flouriſhed about A. A. C. 140. He ſtudied at Athens, and was offered citizenſhip, but declined. He came to Rome where he had the SCIPIOS, and the *Læliuſes* among his diſciples. Scipio Africanus, the younger, was ſo attached to him, that he took him along with him in all his expeditions. His countrymen, the Rhodians, were highly indebted to him for various privileges and immunities. He wrote a treatiſe *on the Duties of Man*, which Cicero praiſes greatly in his work on the ſame ſubject. He lived about 30 years after this.

(1.) PANAGIA, an iſland in the Grecian Archipelago, 16 miles NW. of Santorin.

(2.) PANAGIA, a town of European Turkey, in Romania, 14 miles N. of Gallipoli.

PANAGIOTI, a Greek nobleman of the 17th century, who was chief interpreter to the Grand Signior; and had ſo great intereſt with him, that he procured many favours to his countrymen. He wrote a book in modern Greek, entitled, "The Orthodox Confeſſion of the Catholic and Apoſtolic Eaſtern Churches." He died in 1673.

PANAHAN. See PANAON.

PANAIA, a town of Naples, in Calabria Ultra, 4 miles NW. of Nicotera.

(1.) PANAMA, a province of S. America, on the iſthmus of Darien, containing 3 cities, 12 villages, and a great number of Indian huts; beſides a number of ſmall adjacent iſlands in the Gulf. The pearl fiſhery is carried on in theſe iſlands. Moſt of the inhabitants employ ſuch of their negroes in it as are good ſwimmers. Theſe ſlaves plunge and replunge in the ſea in ſearch of pearls, till this exerciſe has exhauſted their ſtrength or their ſpirits. Every negro is obliged to deliver a certain number of oyſters. Thoſe in which there are no pearls, or in which the pearl is not entirely formed, are not reckoned What he is able to find beyond the ſtipulated obligation, is conſidered as his indiſputable property: he may ſell it to whom he pleaſes, but commonly he cedes it to his maſter at a moderate price. Seamonſters, which abound more about the iſlands where pearls are found, than on the neighbouring coaſts, render this fiſhing dangerous. Some of theſe devour the divers in an inſtant. The manta fiſh, which derives its name from its figure, ſurrounds them, rolls them under its body, and ſuffocates them. To defend themſelves againſt ſuch enemies, every diver is armed with a poniard: the moment he perceives any of theſe voracious fiſh, he attacks them with precaution, wounds them, and drives them away. Notwithſtanding this, there are always ſome fiſhermen deſtroyed, and a great number crippled. The pearls of Panama are commonly of a very fine water. Some of them are even remarkable for their ſize and figure: theſe were formerly ſold in Europe. Since art has imitated them, and the paſſion for diamonds has entirely ſuperſeded, or prodigiouſly diminiſhed, the uſe of them, they have found a new mart more advantageous than the firſt. They are carried to Peru, where they are in great eſtimation. This branch of trade has, however, infinitely leſs contributed to give reputation to Panama, than the advantage which it hath long enjoyed, of being the mart of all the productions of the country of the Incas that are deſtined for the old world. Theſe riches, which are brought hither by a ſmall fleet, were carried, ſome on mules, others by the river Chagre, to Porto Bello, that is ſituated on the N. coaſt of the Iſthmus which ſeparates the two ſeas. See DARIEN.

(2.) PANAMA, the capital of the above province, where the treaſures of gold and ſilver, and the other rich merchandiſes of Peru, are lodged in magazines till they are ſent to Europe. When Guzman firſt touched at this place in 1514, it conſiſted entirely of fiſhermens huts. Orius D'Avila ſettled a colony of it a few years after, and in 1521, it was conſtituted a city by the emperor Charles V. with the proper privileges. In 1670 it was ſacked and burnt by John Morgan, an Engliſh buccanier, who had taken Porto Bello, in 1669. This misfortune induced the inhabitants to remove the city to its preſent ſituation. For the greater ſecurity, the new city was incloſed by a free-ſtone wall, and the houſes were built of ſtone and brick. Since that time ſeveral baſtions have been added, and now there is always a complete garriſon maintained, and the walls are mounted with large canon. It was entirely conſumed by fire in 1737. After this it was rebuilt, as it now ſtands, with neat elegant houſes, but not magnificent. The inhabitants are rather independent in their fortunes than rich; there are

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few opulent, and ſcarce any in a ſtate of poverty. The harbour is convenient, well ſecured againſt ſtorms by a number of ſurrounding iſlands, and capable of containing the largeſt fleets. Here the royal audience is ſeated, at which the governor of Panama reſides. Lon. 82. 15. W. Lat. 8. 48. N.

(3.) PANAMA BAY, a bay on the coaſt of Panama.

(4.) PANAMA, OLD, which was burnt by Morgan, was ſeated four miles from the preſent city. See N° 2.

PANAMAO, one of the PHILIPPINES.

PANAMARIBO, a town of Guiana, on the coaſt of Surinam, ESE. of Demerara. Lon. 56. 26. W. Lat. 6. 0. N.

PANAMOS, a mountain of South America, in Truxillo; one of the Andes.

PANAON, or PANAHAN, one of the Philippines, about 45 miles in circumference, abounding in mountains and rivers, but not very populous.

PANARAGA, a kingdom in the iſle of Java, with its capital on the South. Sixty miles E. of Mataran.

PANARD, Charles, a French poet, born at Courville, near Charteris, in 1691. His fables, allegories, and anacreontics are much admired; and his epigrams ſtill more ſo. He died at Paris of an apoplexy, in 1765.

PANARI, or PANARIA, } one of the Liparia iſlands, in the Tuſcan Sea. It is five miles in circumference, and the ſoil is barren. Lon. 15. 0. E. Lat. 39. 0. N.

(1.) PANARO, a department of Italy, ſo named from the river (N° 2.), comprehending the ci-devant duchy of Modena. (See MODENA, N° 1.) On the 13th May 1801, at the general cenſus, it contained 200,170 citizens, and was divided into two diſtricts; viz. Modena (ſee MODENA, N° 2.) and *Caſtelnuovo of Carfagnano*. The city of MODENA (N° 3.) is the capital.

(2.) PANARO, a river of Italy, which riſes in the Appenines, croſſes the valley of Frignano, and running through the above department, waters Fenal, and falls into the Po at Bondeno, ten miles above Ferrara.

PANAROCAN, or PANARUCAN, } a kingdom in the iſland of Java, with its capital, ſeated on the north coaſt, near the eaſt part of the iſland. The chief trade is in ſlaves and long pepper; a great number of the Portugueſe are mingled with the natives. Lat. 7. 30. S.

(1.) PANARY. *adj.* [from *panis*, Lat. bread], of or belonging to bread.

(2.) PANARY FERMENTATION. See CHEMISTRY, *Index*; BAKING, and BREAD.

PANAT, a town of France, in the department of the Aveiron, 17 miles S. of Rhodez, and 18 W. of Milhau.

PANATHENÆA. [πανάθηναια], in Grecian antiquity, an ancient Athenian feſtival, in honour of ATHENA, or MINERVA, the proteſtreſs of Athens. Harpocration and Suidas refer the inſtitution of this feſtival to Erichthonius the 4th king of Athens, who lived before Theſeus. Theodoret alone ſays the feaſt was eſtabliſhed by Orpheus. Be this as it will; till Theſeus, it was never a particular feaſt of the city of Athens, and was called ſimply *Athenæa*; but that prince, uniting all the people of Attica into one republic, they afterwards aſſiſted at the feaſt; whence the name *Panatheneæa*, i. e. the feaſt of all Attica. In effect, all Attica was preſent; and each people ſent a bullock for the ſacrifices, and for the entertainment of the vaſt multitudes of people aſſembled. There were two feſtivals under this denomination, the greater and the leſſer. The greater panathenæa were exhibited every five years; the leſs every three, or, according to ſome writers, annually. Though the celebration of neither, at firſt, employed more than one day, yet, in after times, they were protracted for many days, and ſolemnized with greater preparations and magnificence than at their firſt inſtitution. The ceremonies were the ſame in the great and the little panathenæa; excepting for a banner wherein the actions of the goddeſs were repreſented in embroidery, performed by maids, with the names of thoſe who had diſtinguiſhed themſelves in the ſervice of the republic; which was only borne at the greater. Prizes were eſtabliſhed for three different kinds of combat; the firſt conſiſted of foot and horſe races; the ſecond, of athletic exerciſes; and the third, of poetical and muſical conteſts. Theſe laſt are ſaid to have been inſtituted by Pericles. Singers of the firſt claſs, accompanied by performers on the flute and cithara, exerciſed their talents here, upon ſubjects preſcribed by the directors of theſe exhibitions. A particular account of the order obſerved in this feſtival, with the various conteſts, races, prizes, &c. may be found in Barthelemi's *Travels of Anacharſis*, vol. ii. p. 434.

PANAX, GINSENG, a genus of the dicœcia order, belonging to the polygamia claſs of plants. There are five ſpecies.

1. PANAX ARBOREA, } Of theſe two ſpecies
2. PANAX FRUTICOSUM } and the SPINOSA, there is nothing that merits particular notice.

3. PANAX QUINQUEFOLIUM, *the five-leaved Ginſeng* is a native of North America, and is generally believed to be the ſame with the Tartarian ginſeng; the figures and deſcriptions of that plant which have been ſent to Europe by the miſſionaries agreeing perfectly with the American plant. This hath a jointed, fleſhy, and taper root, as large as a man's finger, frequently divided into two ſmaller fibres downwards. The ſtalk riſes near a foot and an half high, and is naked at the top, where it generally divides into three ſmaller foot-ſtalks, each ſuſtaining a leaf compoſed of five-ſpear-ſhaped lobes, ſawed on their edges; they are of a pale green, and a little hairy. The flowers grow on a ſlender foot-ſtalk juſt at the diviſion of the foot-ſtalks which ſuſtain the leaves, and are formed into a ſmall umbel at the top; they are of an herbaceous yellow colour, compoſed of ſmall yellow petals, which are recurved. Woodville ſays they are white, that they are produced in a roundiſh terminal umbel, and are hermaphrodite and male on ſeparate plants. The former (ſee *plate* CCLXVI.) ſtand in cloſe ſimple umbels; the involucrum conſiſts of ſeveral ſmall, tapering, pointed, permanent leaves; the proper calyx is tubular, and divided at the rim into five ſmall teeth; the corolla conſiſts of five petals, which are ſmall, oval, equal, and reflexed; the filaments

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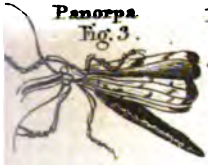
are

Fig. 2.

Panorpa
Fig. 3.

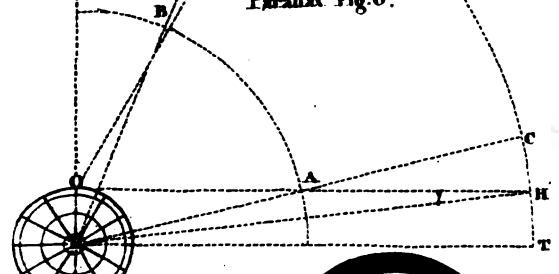


Panax Quinquefolium.
Fig. 1.

Panorpa
Fig. 4.

Papaver Somniferum. Fig. 5.

Parallax. Fig. 6.



Perambulator
Fig. 7.

Procellaria Æquinoctialis

Fig. 8.

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are five, ſhort, and furniſhed with ſimple antheræ; the germen is roundiſh, placed below the corolla, and ſupports two ſhort erect ſtyles, crowned by ſimple ſtigmata; the fruit is an umbilicated two-celled berry, each containing a ſingle irregularly heart-ſhaped ſeed. The flowers appear in the beginning of June; and are ſucceeded by compreſſed, heart-ſhaped berries, which are firſt green, but afterwards turn red; incloſing two hard, compreſſed, heart-ſhaped ſeeds, which ripen in the beginning of Auguſt. Ginſeng was formerly ſuppoſed to grow only in Chineſe Tartary, affecting mountainous ſituations, ſhaded by cloſe woods; but it has now been long known, that this plant is alſo a native of North America, whence M. Sarrafin tranſmitted ſpecimens of it to Paris in the year 1704; and the ginſeng ſince diſcovered in Canada, Pennſylvania, and Virginia, by Lafiteau, Kalm, Bartram, and others, has been found to correſpond exactly with the Tartarian ſpecies; and its roots are now regularly purchaſed by the Chineſe, who conſider them to be the ſame as thoſe of eaſtern growth, which are known to undergo a certain preparation, whereby they aſſume an appearance ſomewhat different. For it is ſaid, that in China the roots are waſhed and ſoaked in a decoction of rice or millet-ſeed, and afterwards expoſed to the ſteam of the liquor, by which they acquire a greater firmneſs and clearneſs than in their natural ſtate. The plant was firſt introduced into England in 1740, by that induſtrious naturaliſt Peter Collinſon. They thrive in thoſe places where it hath a light ſoil and ſhady ſituation, and will produce flowers and ſeeds; but the latter, though in appearance ripe and perfect, will not produce any new plants, as Mr Miller ſays he has repeatedly made the experiment, and waited for them three years without diſturbing the ground. There are many good ſpecimens in the Royal Botanic Garden at Kew. The dried root of ginſeng, as imported here, is ſcarcely the thickneſs of the little finger, about three or four inches long, frequently forked, tranſverſely wrinkled, of a horny texture, and both internally and externally of a yelloviſh white colour. On the top are commonly one or more little knots, which are the remains of the ſtalks of the preceding years, and from the number of which the age of the root is judged of. "To the taſte it diſcovers a mucilaginous ſweetneſs, approaching to that of liquorice, accompanied with ſome degree of bitterneſs and a ſlight aromatic warmth, with little or no ſmell. It is far ſweeter, and of a more grateful ſmell than the roots of fennel, to which it has by ſome been ſuppoſed ſimilar; and differs likewiſe remarkably from thoſe roots in the nature and pharmaceutic properties of its active principles, the ſweet matter of the ginſeng being preſerved entire in the watery as well as the ſpirituous extract, whereas that of fennel roots is deſtroyed or diſſipated in the inſpiſſation of a watery tincture. The ſlight aromatic impregnation of the ginſeng is likewiſe in good meaſure retained in the watery extract, and perfectly in the ſpirituous." Lewis, Mat. Med. p. 325. The Chineſe aſcribe extraordinary virtues to the root of ginſeng; and have long conſidered it as a ſovereign remedy in almoſt all diſeaſes to which they are liable, having no confidence in any medicine unleſs in combination with it. Jartoux, when in China, boaſted of its effects on himſelf. But we know of no proofs of the efficacy of ginſeng in Europe; and from its ſenſible qualities we judge it to poſſeſs very little power as a medicine. A drachm of the ginſeng root may be ſliced and boiled in a quarter of a pint of water to about two ounces; then a little ſugar being added, it may be drank as ſoon as it is cool enough. The doſe muſt be repeated morning and evening; but the ſecond doſe may be prepared from the ſame portion of root which was uſed at firſt; for it may always be twice boiled.

4. PANAX SPINOSA. See N° 1.

5. PANAX TRIFOLIUM, the *three-leaved Ginſeng*, grows naturally in N. America; but Mr Miller never ſaw more than one plant, which was ſent to him from Maryland, and did not live beyond the firſt year; being planted in a dry ſoil, in a very dry ſeaſon. The ſtalk was ſingle, and did not riſe more than five inches in height, dividing into three foot-ſtalks, each ſuſtaining a trifoliate leaf, whoſe lobes were longer, narrower, and deeper indented on their edges than the former. The flower-ſtalk roſe from the diviſions of the foot-ſtalk of the leaves; but before the flowers opened, the plant decayed.

(1.) PANAY, an iſland of Aſia, one of the PHILIPPINES, lying between thoſe of Paraguay and Negro. It is 250 miles in circumference, and is the moſt populous and fertile of them all. It is watered by a great number of rivers and brooks, and produces a great quantity of rice. Its ſhape is triangular. The names of its principal capes are Potol, Naſo, and Bulacabi. The coaſt from Bulacabi to Potol lies E. and W.; from Potol to Naſo, N. and S.; from Bulacabi to Iloilo, another cape leſs than the reſt, is alſo N. and S.; from Iloilo to Cape Naſo, E. and W. The mouth of the harbour is covered by a ſmall iſland called LUTAYA, in which the Spaniards had a ſafe retreat before they diſcovered and conquered Manilla and Cavite. The iſland of Panay is divided into juriſdictions; all of which except PANAY (N° 3.) are ſubject to the alcayde of Otton, who reſides at Iloilo, a point of land running out into the ſea, on the ſouth ſide, between the rivers Tig-Bavan and Jaro, and with the iſland Imaras, forms a ſtrait not above half a league over, or rather an open harbour. On this point the governor Gonzalo Ronquillo cauſed a fort to be built in 1681. The iſland contains about 16,360 tributary Indians, partly belonging to the king, and partly to particular lords; but they all pay in rice, the iſland producing 100,000 buſhels, Spaniſh meaſure, but little other grain. The inhabitants are ſtout, luſty, and induſtrious farmers, and expert huntſmen, the country being full of wild boars and deer. The women make cloth of ſeveral colours. There are in the 14 pariſhes, belonging to the friars of St Auguſtin, three benefices of ſecular prieſts, who adminiſter the ſacraments to the garriſon of Iloilo. Beſides the tributary Indians, there are blacks called *Negrillos*, who were the firſt inhabitants of the iſland, and afterwards driven into the thick woods by the Biſayas who conquered it. Their hair is not ſo ſtiff curled, nor are they ſo ſtrong

as

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as the Guinea blacks. They live in the moſt uncouth parts of the mountains, with their wives and children, and go quite naked. They are ſo ſwift, that they often overtake wild boars and deer. They ſtay about the dead beaſt as long as it laſts; for they have no other ſubſiſtence but what they acquire by hunting. They fly from the Spaniards from fear. Lon. 138. 45. E. of Ferro. Lat. 11. 10. N.

(2.) PANAY, a river in the above iſland, which gives name to it, and fertilizes it by running a courſe of 120 miles through it; and falls into the ſea, on the N. ſide, nearly in the middle between Capes Potol and Bulacabi.

(3.) PANAY, a province of the above iſland, which comprehends within its juriſdiction the whole country between Capes Bulacabi and Potol.

PANAYAS, a town of Portugal in Alentejo; ſix miles NW. of Ourique.

(1.) PANBRIDE, a pariſh of Scotland, in Angusſhire, 5¼ miles long and 2 broad; ſo named from St Bridget; *pan* being a corruption of *fanum*, q. d. *St Bridget's Church*. The ſurface is moſtly level, but has a declivity for ſome miles from N. to S. The ſoil is ſandy on the coaſt, clay in the middle, and mooriſh in the north. The ſea-coaſt is flat, but rocky. The population, in 1790, was 1460; increaſe 201 ſince 1744. The anceſtors of the celebrated Scottiſh hiſtorian Hector Boece were for ſeveral generations proprietors of this pariſh, and he was born in it. (See BOECE.) It has two ſmall harbours at the villages of E. and W. Havens. The houſe of Panmure, with its extenſive plantations, belonging to the Hon. W. Ramſay Maule, is in the north part of it.

(2.) PANBRIDE, a village in the above pariſh, 10 miles E. of Dundee.

* PANCAKE. *n. ſ.* [*pan* and *cake*.] Thin pudding baked in the frying-pan.—A certain knight ſwore by his honour they were good *pancakes*. *Shak.*—The flour makes a very good *pancake*. *Mortimer*.

PANCALE, or } a town of France, in the dep.
PANCALIER, } of the Po, and late Piedmonteſe, ſeated on the Po; 5 miles SW. of Carmagnola, and 12½ S. of Turin.

PANCARPUS. [Gr. from πᾶν, *all*, and καρπὸς, *fruit*], in Roman antiquity, a kind of ſhow which the Roman emperors frequently exhibited to the people. The name was alſo given by the Athenians to a ſacrifice wherein all kinds of fruits were offered. In this ſpectacle, the Circus being all ſet over with large trees, repreſented a foreſt, into which the beaſts being let from the dens under ground, the people, at a ſign given by the emperor, purſued, ſhot, and killed all they could lay hold off, which they afterwards carried away, to regale upon at home. The beaſts uſually given on theſe occaſions were boars, deers, oxen, and ſheep. Caſaubon, Cujas, Pithou, &c. make the *pancarpus* and SYLVA the ſame thing; Salmaſius will have them different. The ſylva, according to him, was ſuch a diverſion as that above deſcribed; but the pancarpus a combat, wherein robuſt people, hired for that purpoſe, fought with wild beaſts; which opinion he confirms from Caſſian, Juſtinian, Claudian, Firmicius, Manilius, and Caſſiodorus.

PANCAWIR, a town of Indoſtan in Malwa; 42 miles WNW. of Raajegar, and 60 N. of Ougein.

PANCHÆA: 1. An iſland of Arabia Felix, where Jupiter Triphylius had a temple: 2. A country of Arabia, famous for its perfumes. *Virg. Georg.* ii. 139.

PANCIROLLUS, Guy, a famous lawyer of Rhegium, was educated at the principal univerſities of Italy; and became profeſſor of law at Padua. Philibert Emanuel, duke of Savoy, invited him to his univerſity in 1571, where he compoſed his ingenious treatiſe *De rebus inventis et deperditis*. But the air of Turin not agreeing with him, he there loſt an eye, and, for fear of loſing the other, returned to Padua, where he died in 1591.

PANCLA, a mountain of Aſia, in Thibet.

PANCORVO, a town of Spain, in Old Caſtile; between Burgos and Miranda de Ebro.

PANCRAS, a town of Middleſex, on the NW. ſide of London, in the highway to Kentiſh Town. Its church is one of the prebends of St Paul's, and it is ſaid to be as old as that church, even in the reign of Queen Elizabeth, when it is repreſented as weather-beaten and ſtanding alone, though it had formerly many buildings about it. On the ſouth ſide of the church is a medicinal ſpring.

PANCRATIASTÆ. See PANCRATIUM, N° 1.

* PANCRATICAL. *adj.* [πᾶν and κρατὸς.] Excelling in all the gymnaſtic exerciſes.—He was the moſt *pancratical* man of Greece. *Brown*.

(1.) PANCRATIUM. [from πᾶν, *all*, and κρατέω, *I overcome*], among the ancients, a kind of intermixed exerciſe, conſiſting of the *luctæ* or wreſtling, and the pugilate or boxing; but it differs in this, that, as the athletæ were not to ſeize the body, their hands were not armed with gauntlets, and gave leſs dangerous blows. It was the third gymnaſtic exerciſe, and not introduced till long after the others. Thoſe who engaged in theſe exerciſes were called PANCRATIASTÆ, as well as thoſe who did not confine themſelves to one exerciſe, but ſucceeded in ſeveral different ones. See Barthelemi's *Travels of Anacharſis*, vol. iii.

(2.) PANCRATIUM, in botany, *Sea Daffodil*, a genus of the monogynia order, belonging to the hexandria claſs of plants, and in the natural method ranking in the 9th order, *Spathaceæ*.

(1.) * PANCREAS. *n. ſ.* [πᾶν and κρέας.] The *pancreas* or ſweet bread, is a gland of the conglomerate ſort, ſituated between the bottom of the ſtomach and the vertebræ of the loins; it lies acroſs the abdomen, reaching from the liver to the ſpleen, and is ſtrongly tied to the peritonæum, from which it receives its common membranes. It weighs commonly 4 or 5 ounces. It is about 6 fingers breadth long, 2 broad, and one thick. Its ſubſtance is a little ſoft and ſupple. *Quincy*.

(2.) PANCREAS. See ANATOMY, *Index*.

* PANCREATICK. *adj.* [from *pancreas*.] Contained in the pancreas.—In man and viviparous quadrupeds, the food moiſtened with the ſaliva is firſt chewed, then ſwallowed into the ſtomach, and ſo evacuated into the inteſtines, where being mixed with the choler and *pancreatick* juice, it is further ſubtilized, and eaſily finds its way in at the ſtreight orifices of the lacteous veins. *Ray*.—The

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The bile is so acrid, that nature has furnished the *pancreatic* juice to temper its bitterness. *Arbuth.*

PANCSOWA, a town and fort of Hungary, in Temeswar; on the N. bank of the Danube; 8 miles N. of Belgrade, and 43 SSW. of Temeswar. In 1789, it was burnt by the Austrians, to prevent its affording a harbour to the Turks.

PANCTOU, a town of Asia, in Thibet.

(1.) * PANCY. Pansy. *n. f.* [corrupted, I suppose, from *panacey; panacea.*] A flower; a kind of violet.—

Pancies to please the sight, and cassia sweet to smell. *Dryden.*

—The real essence is as impossible for us to know, as for a blind man to tell in what flower the colour of a *pansy* is, or is not to be found, whilst he has no idea of the colour of a *pansy*. *Locke.*—

From the brute beasts humanity I learn'd,
And in the *pansy's* life God's providence discern'd. *Harte.*

(2.) Pansy. See Viola, N° 3.

PANDA, in mythology, a goddess who was invoked as the protectress of travellers and navigators. The goddess of peace was also called *Panda*, because she opened the gates which were shut in time of war. According to Varro, Panda is also a surname of Ceres, derived *a pane dando*, because she gave bread to mankind.

PANDANUS, in botany, a genus of the monandria order, belonging to the dioecia class of plants.

PANDARUS, in fabulous history, a son of Lycaon, who assisted the Trojans in their war with the Greeks. He wounded Menelaus and Diomedes, but was at last killed by the latter. *Hom. Il.* ii. and v. *Virg. Æn.* v. 495.

PANDATARIA, or PANDATERIA, an island in the Tuscan sea; a place of banishment for illustrious exiles. *(Suet. Plin. Strabo, Mela, Tacitus.)* It is now named Santa Maria, situated between Pontia and Ischia. *Holstenius.*

(1.) * PANDECT. *n. f.* [*pandecta*, Latin.] 1. A treatise that comprehends the whole of any science.—It were to be wished, that the commons would form a *pandect* of their power and privileges. *Swift.* 2. The digest of the civil law.

(2.) Pandectæ, (2.) Pandects, [from πᾶν, *all*, and δέχομαι, *to take, q. d.* a book containing all things, or all laws.] the digest or collection, made by Justinian's order, of 534 decisions or judgments of the ancient lawyers, on so many questions occurring in the civil law; to which that emperor gave the force of law, by the epistle prefixed to them. They consist of 50 books, and make the first part of the body of the civil law. They were denoted by ππ; but the copists taking those ππ for *ff*, the custom arose of quoting them by *ff*. In 1137, the pandects of Justinian, which had been brought by an Amalfitan merchant from the east, fell into the hands of the Pisans, and for near three centuries they were called *Pandectæ Pisanæ*. But, about 1416, Pisa being taken by the Florentines, they were transported to Florence, where they are now preserved in the library of the Medici, and named *Pandectæ Florentinæ*. Papias extends the name of *Pandects* to the Old and New Testament. There are also Pandectæ *Medicinæ* by Mat. Sylvaticus of Mantua; *Pandects of Turkey*, by Leunclavius; and *Pandectæ canonum*, by Bp. Beveridge.

* PANDEMICK. *adj.* [πᾶν and δῆμος.] Incident to a whole people.—Those instances bring a consumption, under the notion of a *pandemick* or endemick. *Harvey.*

PANDEMUS, a surname of Cupid. *Plutarch.*

* PANDER. *n. f.* [This word is derived from *Pandarus*, the pimp in the story of *Troilus* and *Cressida*; it was therefore originally written *pandar*, till its etymology was forgotten.] A pimp; a male bawd; a procurer. An agent for the lust or ill designs of another.—

Let him, with his cap in hand,
Like a base *pander*, hold the chamber door,
Whilst by a slave,
His fairest daughter is contaminated. *Shak.*

—Thou art the *pander* to her dishonour. *Shak.*—If ever you prove false to one another, since I have taken such pains to bring you together, let all pitiful goers between be called *panders* after my name. *Shak.*

The sons of dappy punks, the *pander's* heir,
Are privileged.
To clap the first, and rule the theatre. *Dryden.*
Thou hast confess'd thyself the conscious *pander*
Of that pretended passion. *Dryden.*
My obedient honesty was made
The *pander* to thy lust and black ambition. *Rowe.*

* *To* Pander. *v. a.* [from the noun.] To pimp; to be subservient to lust or passion.—

First itself as actively doth burn,
And reason *panders* will. *Shak.*

* PANDERLY. *adj.* [from *pander*.] Pimping; pimplike.—Oh, you *panderly* rascals! there's a conspiracy against me. *Shak.*

PANDIA, an ancient festival held at Athens, instituted by Pandion, from whom some derive its name; though others insist that, as it was observed in honour of Jupiter, the name is derived from his omnipotence, because he πάντα κρατεῖ δύναται, can move and turn *all* things as he pleases.

(1.) * PANDICULATION. *n. f.* [*pandiculans*, Lat.] The restlessness, stretching, and uneasiness that usually accompany the cold fits of an intermitting fever.—Windy spirits, for want of a due volatilization, produce in the nerves a *pandiculation*, or oscitation, or stupor. *Floyer.*

(2.) Pandiculation also implies that violent and tensive motion of the solids, which accompanies yawning.

PANDION I. and II. kings of Athens. See Attica, § 6.

PANDIONIDES, the children of Pandion II. viz. Ægeus, Pallas, Nisus, Lycus, Progne, and Philomela. See these articles.

PANDOORS, *n. f.* or Pandoor Oysters, a name given to the largest and fattest kind of oysters found at Preston Pans; so named from the *Doors* of the *Pans*, those found nearest the town being always the largest and best. *Sir J. Sinclair's Stat. Acc.* XVII, 70.

PANDORA, in the mythology, a woman formed by Prometheus, to whom each of the gods gave some perfection. Venus bestowed upon her beauty; Pallas, wisdom; Juno, riches; Apollo, music; and Mercury, eloquence: but Jupiter, being

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ing displeased at Prometheus for having stolen fire from heaven to animate the male he had formed, gave Pandora a box, which she was ordered not to open; and then sent her to the earth with this box, in which were inclosed age, diseases, pestilence, war, famine, envy, discord, and all the evils and vices that could afflict mankind. This fatal box was opened by Epimetheus, Prometheus's brother, when instantly all the diseases and mischiefs with which it was filled spread over the earth, and Hope alone remained at the bottom. Hesiod says that she was the first woman.

PANDORON. See PANDURA.

PANDOSIA, a strong inland town of the Brutii, on the Acheron, where Alexander of Epirus, deceived by the oracle of Dodona, met his fate and perished. (*Livy, Justin, Strabo.*) Now called *Mendicino. Holstein.*

(2.) PANDOSIA, a town of Epirus, on the Acheron, which Alexander of Epirus was advised to avoid as fatal, but which he met with in Italy. (*Livy.*) This last is said to have been the residence of the Chaonian kings. *Strabo.*

PANDOURS are Hungarian infantry; they wear a loose garment fixed tight to their bodies by a girdle, with great sleeves, and large breeches hanging down to their ancles. They use fire arms, and are excellent marksmen; they have also a kind of sabre near four feet long, which they use with great dexterity.

PANDSALA, lakes of Asia, in Thibet.

PANDUR, a Rascian village in Hungary, near Baja, whence the PANDOURS took their name.

PANDURA, or PANDORON, a musical instrument, used among the ancients, resembling the lute; so called from πᾶν and δῶρον, *i. e. all gifts.* Isidore derives the name from its inventor *Pandarus*; others from PAN, to whom they attribute its invention, as well as that of the flute. It has the same number of strings with the lute; but they are of brass, and of consequence give a more agreeable sound than those of the lute. Its frets are of copper, like those of the cistre; its back is flat, like those of the guittar; and the rims of its table, as well as its ribs, are cut in semicircles. Du Cange observes, that Varro, Isidore, and others of the ancients, mention it as having only three strings; whence it is sometimes also spoken of under the denomination τρίχορδον, *trichordum.*

PANDURIFORUM. See BOTANY, *Glossary.*

* PANE. *n. s.* [*paneau*, Fr.] 1. A square of glass.

The letters appeared reverse thro' the *pane*,
But in Stella's bright eyes they were plac'd right again. *Swift.*

—The face of Eleanor owes more to that single *pane*, than to all the glasses she ever consulted. *Pope's Letters.* 2. A piece mixed in variegated works with other pieces.—

Him all repute
To judge of laces, pink, *panes*, print, and plait,
Of all the court to have the best conceit. *Donne.*

(1.) PANEAS, the apparent spring from which the Jordan rises, on the extremity of the W. side of the Trachonitis. *Pliny, Josephus.*

(2, 3.) PANEAS, a district adjoining to the spring *Paneas*, with a cognominal town, either enlarged, or originally built, by Philip son of Herod, and called *Cæsarea* by Josephus; and by St Matthew, *Cæsarea Philippi*; with a temple erected to Augustus his benefactor, who conferred the Trachonitis upon him. It was afterwards called *Neronias*, in honour of Nero. *Josephus. Pliny.*

(1.) * PANEGYRICK. *n. s.* [*panegyrique*, Fr. πανηγυρικὸς] An eulogy; an encomiastick piece.—The Athenians met at the sepulchres of those slain at Marathon, and there made *panegyricks* upon them. *Stilling fleet.*—That which is a satyr to other men must be a *panegyrick* to your lordship. *Dryden.*—As he continues the exercises of those eminent virtues, he may leave materials for a *panegyrick*, not unworthy the pen of some future Pliny. *Prior.*—

When themes like these increase,
Shall *panegyric* reign, and censure cease? *Young.*

(2.) PANEGYRICK is derived from πᾶν, *all*, and ἀγείρω, *to assemble*; because anciently held in public assemblies of the Greeks, at their games, feasts, fairs, or religious meetings. To make their panegyrics the more solemn, the Greeks used to begin with the praises of the deity in whose honour the games, &c. were celebrated; then they descended to the praise of the people or country where they were celebrated; then to the princes or magistrates who presided at them; and at length to the champions, especially the conquerors, who had gained the prizes in them.

PANEGYRICUM, in church history, an ecclesiastical book, used by the Greek church, containing the panegyrical orations of various authors, on the solemnities of Jesus Christ and the saints. It is found in MS. in most churches, but is not the same in all; each church having its particular saints, and the compilers of this kind of books usually suited their collections to the taste of their own devotion. They are disposed according to the order of months, and frequently consist of 12 volumes, answering to the 12 months. Among the principal authors of these works are Athanasius, Cyrill, Basil, Chrysostom, &c.

* PANEGYRIST. *n. s.* [from *panegyrick*; *panegyriste*, Fr.] One that writes praise; encomiast. —Add these few lines out of a far more ancient *panegyrist* in the time of Constantine the Great. *Camden.*

(1.) * PANEL. *n. s.* [*panellum*, Lat. *paneau*, Fr.] 1. A square, or piece of any matter inserted between other bodies.—The chariot was all of cedar, save that the fore end had *panels* of sapphires, set in borders of gold. *Bacon.*—Maximilian, his whole history is digested into 24 square *panels* of sculpture in bas relief. *Addison on Italy.*—This fellow will join you together as they join wainscot: then one of you will prove a shrunk *panel*, and, like green timber, warp. *Shak. As you like it.*—

A bungler thus, who scarce the nail can hit,
With driving wrong will make the *panel* split. *Swift.*

2. [Panel, *panellum*, Lat. of the French, *panne*, id est, *pellis* or *paneau*, a piece or pane in English.] A schedule or roll, containing the names of such jurors as the sheriff provides to pass upon a trial. And empannelling a jury, is nothing but the entering them into the sheriff's roll or book. *Cowel.*—Then 12 of such as are indifferent, and are returned upon the principal *panel*, or the tales, are sworn to try the same, according to evidence. *Hale.*

(2.) PANEL,

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(2.) PANEL, in Scots law, ſignifies the priſoner at the bar, or perſon who takes his trial before the high court of juſticiary for ſome crime.

PANERE, a town of Ceylon, 24 miles NNE. of Columbo.

PANETIUS. See PANÆTIUS.

PANETURE, a town of Ceylon, 18 miles S. of Columbo.

* PANG. *n. ſ.* [either from *pain*, or *bang*, Dutch, uneaſy.] Extreme pain; ſudden paroxyſm of torment.—

Say, that ſome lady
Hath for your love as great a *pang* of heart,
As you have for Olivia. *Shak. Twelfth Night.*
See how the *pangs* of death do make him grin! *Shak.*

Stiff'rance made
Almoſt each *pang* a death. *Shak. Henry* VIII.
Earth trembl'd from her entrails, as again
In *pangs*; and nature gave a ſecond groan. *Milt.*
Juno pitying her diſaſtrous fate,
Sends Iris down, her *pangs* to mitigate. *Denh.*
Succeſs let others teach, learn thou from me
Pangs without birth. *Dryden.*
——All the *pangs* and fury of deſpair. *Addiſ.*
I ſaw the hoary traitor
Grin in the *pangs* of death. *Addiſon.*
Ah! come not, write not, think not once of me,
Nor ſhare one *pang* of all I felt for thee. *Pope.*

* *To* PANG. *v. a.* [from the noun.] To torment cruelly.—

'Tis a ſuff'rance *panging*,
As ſoul and body's parting. *Shak.*
How thy memory
Will then be *pang'd* by me. *Shak.*

PANGÆUS, a mountain of Thrace, joined to Rhodope, near the ſources of the Neſtus; famous in fabulous hiſtory, as the ſcene of Orpheus's miraculous muſic, with the beaſts, &c. It had gold and ſilver mines.

PANGASANE, an iſland in the E. Indian Ocean, 45 miles long, and 9 broad; between Celebes and Bouton.

PANGASINAN, a town on the W. coaſt of Lucon iſle; capital of a province. Lon. 15. 40 N.

PANGIMODOO, an iſland in the S. Pacific Ocean, near Tongataboo.

PANKER, a town of Holſtein.

PANGLAO, or PANGLO, } one of the Philippines, 60 miles N. of Mindanao.

PANGO, a province of Congo, with its capital; ſeated on the Barbela.

PANGOLIN, a ſpecies of the MANIS peculiar to Hindoſtan. (See *Plate* CCLXVI. *fig.* 2.) It is certainly a remarkable variety, if not a different ſpecies, of the pangolin of Buffon. According to a paper in the *Aſiatic Reſearches*, "it has hardly any neck; and, though ſome filaments are diſcernible between the ſcales, they can ſcarce be called briſtles. But the principal difference is in the tail; that of Buffon's animal being long, and tapering almoſt to a point; while that of ours is much ſhorter, ends obtuſely, and reſembles in form and flexibility the tail of a lobſter. In other reſpects it ſeems to have all the characters of Buffon's pangolin; a name derived from that by which the animal is diſtinguiſhed in Java, and conſequently preferable to MANIS or PHILIDOTUS, or any other appellation deduced from any European language. A female pangolin, deſcribed in the *Aſiatic Reſearches*, "had a long tongue ſhaped like that of the cameleon; and if it was nearly adult, as we may reaſonably conclude from a young one found in it, the dimenſions of it were much leſs than thoſe which Buffon aſſigns generally to his pangolin; for he deſcribes its length as 6, 7, or 8 feet, including the tail, which is almoſt, he ſays, as long as the body when it has attained its full growth; whereas ours is but 34 inches long from the extremity of the tail to the point of the ſnout, and the length of the tail is 14 inches; but, excluſively of the head, which is 5 inches long, the tail and body are indeed nearly of the ſame length; and the ſmall difference between them may ſhow, if Buffon be correct in this point, that the animal was young. The circumference of its body in the thickeſt part is 20 inches, and that of the tail only 12. There are on each foot five claws, of which the outer and inner are ſmall when compared with the other three. There are no diſtinct toes; but each nail is moveable by a joint at its root. This creature is extremely inoffenſive. It has no teeth, and its feet are unable to graſp. The nails are well adapted for digging in the ground; and the animal is ſo dextrous in eluding its enemies, by concealing itſelf in holes and among rocks, that it is extremely difficult to procure one. The upper jaw is covered with a croſs cartilaginous ridge, which, though apparently not at all ſuited to any purpoſes of maſtication, may, by increaſing the ſurface of the palate, extend the ſenſe of taſte. The œſophagus will admit a man's fore finger with eaſe. The tongue at the bottom of the mouth is nearly about the ſize of the little finger, whence it tapers to a point. The animal can protrude this member a great way from the mouth. The tongue ariſes from the enſiform cartilage and the contiguous muſcles of the belly, and paſſes in form of a round diſtinct muſcle over the ſtomach, through the thorax, immediately under the ſternum, and interior to the windpipe. When diſſected out, the tongue could be eaſily elongated ſo as to reach more than the length of the animal excluſive of its tail. There is a cluſter of ſalivary glands ſeated around the tongue, as it enters the mouth. Theſe will neceſſarily be compreſſed by the action of the tongue; ſo as occaſionally to ſupply a plentiful flow of their ſecretion. The ſtomach is cartilaginous, and analogous to that of the gallinaceous tribe of birds. When diſſected, it is generally found full of ſmall ſtones and gravel, which in India are almoſt univerſally calcareous. The inner ſurface of the ſtomach is rough to the feel, and formed into folds, the interſtices of which are filled with a frothy ſecration. The guts are filled with a ſandy pulp, in which, however, are interſperſed a few diſtinct ſmall ſtones. No veſtiges of any animal or vegetable food have been traced in the whole primæ viæ. The gall-bladder is commonly diſtended with a fluid reſembling in colour and conſiſtence the dregs of beer. It is a viviparous animal. From the contents of its ſtomach and primæ viæ, the pangolin has been ſuppoſed by Mr Burt, an eminent ſurgeon in Bengal, to derive its

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nourishment from mineral substances. This novel conjecture is not a little confirmed by the experiments of M. Bruquatelli of Pavia, on the authority of M. Creil, by which we learn, that some birds have so great a dissolvent power in the gastric juice, as to dissolve in their stomachs flints, rock-crystal, calcareous stones, and shells. See MANIS.

PANGONIA, in the old system of mineralogy, [from παν, *numerous*, and γονυ, *an angle*,] a genus of crystals, consisting of such as are composed of many angles. The bodies of this genus are single-pointed, or imperfect crystals, composed of dodecangular or twelve-planed columns, terminated by twelve-planed pyramids, and the whole body therefore made up of 24 planes. There are three species.

PANJAB, an extensive country of Indostan, comprehending the whole province of Lahore, and the greater part of Moultan. See LAHORE, and MOULTAN, N° 1. It was the scene of Alexander's last campaign in India. See INDIA, § 4. It comprehends a square of 250 miles.

PANIANY, a town of Indostan, in Calicut, 40 miles S. of Calicut.

PANIASIS. See PANYASIS.

PANIC, in botany. See PANICUM.

(1.)* PANICK. *adj.* [from *Pan*, groundless fears being supposed to be sent by Pan.] Violent without cause, applied to fear.—The sudden stir and *panick* fear, when chanticleer was carried away by reynard. *Camden's Remains.*—Which many suspect to be but a *panick* terror. *Brown's Vulg. Errours.*

I left the city in a *panick* fright. *Dryden.*

(2.)* PANICK. *n. s.* [πανικὸς.] A sudden fright without cause.

(3.) PANIC, Polyænus says, originates from PAN, one of the captains of Bacchus, who with a few men put a numerous enemy to rout, by a noise which his soldiers raised in a rocky valley, favoured with a great number of echoes. This stratagem making their number appear far greater than it was, the enemy quitted a very commodious encampment, and fled. Hence all ill-grounded fears have been called *panics*, or *panic fears*; and this gave occasion to the fable of the nymph ECHO being beloved by the god Pan. Others derive the origin of it hence; that in the wars of the Titans against the gods, Pan was the first who struck *terror* into the hearts of the giants. Theon on Aratus says, he did it by the means of a sea-shell, which served him for a trumpet, whereof he was the inventor.

PANICLE, in botany, denotes a soft wooly beard, on which the seeds of some plants hang pendulous; as in millet, reeds, and hay. See BOTANY, *Index*.

PANICOLA, a town of Naples, in Lavora.

PANICUM, in botany, a genus of the digynia order, belonging to the triandria class of plants; and in the natural method ranking in the 4th order, *Gramina*. The calyx is trivalved; the third valvule being very small. There are 35 species, 1. *Panicum Arborescens*; 2. *P. Brevifolium*; 3. *P. Brizoides*; 4. *P. Capillare*; 5. *P. Clandestinum*; 6. *P. Colora:um*; 7. *P. Compositum*; 8. *P. Conglomeratum*; 9. *P. Coronum*; 10. *P. Crus Corvi*: 11. *P. Crus Galli*; 12. *P. Curvatum*; 13. *P. Ischotomum*; 15. *P. Dimidiatum*; 16. *P. Dissectum*; 17. *P. Divaricatum*; 18. *P. Elatum*; 19. *P. Filiforme*; 20. *P. Glaucum*; 21. *P. Grossarium*; 22. *P. Halvoium*; 23. *P. Hirtellum*; 24. *P. Italicum*; 25. *P. Latifolium*; 26. *P. Lineare*; 27. *P. Miliaceum*; 28. *P. Patens*; 29. *P. Polystachion*; 30. *P. Ramosum*; 31. *P. Repens*: 32. *P. Sanguinale*; 33. *P. Verticillatum*; 34. *P. Virgatum*; 35. *P. Viride*. The species of Guinea-grass, by some authors is classed as a panicum; but by expert botanists, who have lately examined the plant, it is the *holcus polygamum*. See POLYGAMUM.

PANINI, Paul, a painter of perspective and architecture. He was born at Placentia in 1691, and studied at Rome, where he designed every vestige of ancient magnificence. In his earlier pictures his composition is rich; the truth of his perspective exact; and his paintings are esteemed for the grandeur of the architecture, the clearness of his colouring, the beautiful figures he introduced, and the elegant taste with which he disposed them; but his later paintings have many faults. He died in 1758.

PANIONIA, in antiquity, a festival celebrated in honour of Neptune by people from *all* the cities of Ionia. In this festival, if the bull offered in sacrifice happened to bellow, it was accounted an omen of divine favour; because that sound was thought acceptable to Neptune.

PANIONIUM, a place in Asia Minor, at the foot of Mount Mycale, near Ephesus, where the deputies of the 12 cities of Ionia assembled to celebrate the above festivals, or to deliberate upon any other public business.

PANIS, an island in the Atlantic, in the mouth of the Bandi.

PANISSIERE, a town of France, in the dep. of Rhone and Loire, 18 miles SE. of Roanne, and 21 W. of Lyons.

PANKINA, a town of Russia, in Kolivan.

PANKOVA, a town of Russia, in Irkutsk.

* PANNADE. *n. s.* The curvet of a horse. *Dinsworth.*

PANNAH, a town of Indostan, in Allahabad, 95 miles SW. of Allahabad.

(1.) PANNANACH, or PANNANICH, a hill of Scotland, in Aberdeenshire, in the parish of Glenmuick; from the N. side of which runs a mineral spring, resembling the SELTZER water in Germany, being strongly impregnated with fixed air, &c. See MINERAL WATERS, § 16, under *Seltzer*. The water is famous for curing scrophulous, scorbutic, and gravelish complaints. The wells are the property of Mr Farquharson of Monaltrie, who has cleared the spring, covered the walls, and erected houses and baths for the accommodation of the visitors.

(2.) PANNANACH, or } a village near the above
(2.) PANNANICH, } hill, on the banks of the Dee, a mile from the wells; with a large and commodious house, erected by Mr Farquharson, called *Pannanach Lodge*, for the accommodation of company who visit the wells.

PANNARIA, one of the Lipari islands. See LIPARA, and LIPARI. The ancients called it THERNISIA, from the hot waters which they found in it. It is about 8 or 9 miles in circumference. It bears wheat and grapes, from which the

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the inhabitants make wine. It appears to be a volcano; its original having been deſtroyed by continued eruptions. It is now no longer of a conical figure. It contains about 100 inhabitants. It is governed by a curate, who depends on the prieſt of the pariſh of St Joſeph in Lipari. The inhabitants live by fiſhing and by fowling. When they feel their iſland ſhaken, they embark with all their wealth, which a ſingle ſloop eaſily contains; and on board, they are ſafe from both the ſhaking of the earth and the eruptions of the lava. In this iſland, there are various remains of ancient buildings, which ſhow that Panaria, either under the Greeks, or in that period when all the elements were taxed for the gratification of Roman luxury, muſt have been adorned with ſuperb buildings, as well as the adjacent iſlands of Lipari, Stromboli, and Baſiluzzo.

(1.) * PANNEL. *n. ſ.* [*pannel*, Dutch; *paneau*, French.] A kind of ruſtic ſaddle.—

A *pannel* and wanty, pack-ſaddle and ped. *Tuſſer.*

Underneath the ſkirt of *pannel*,
'Twixt every two there was a channel. *Hudib.*

(2.) * PANNEL. *n. ſ.* The ſtomach of a hawk. *Ainſworth.*

(3.) PANNELS OF A SADDLE are two cuſhions or bolſters, filled with cow's, deer's, or horſe's hair, and placed under the ſaddle, on each ſide, to prevent the bows and bands from galling the horſe.

PANNELLA, a town of Indoſtan, in Viſiapour, 22 miles W. of Merritch, and 29 S. of Currer.

(1.) * PANNICK. } *n. ſ.* A plant.—The *pan-*
(1.) * PANNICLE. } *nicle* is a plant of the millet kind, differing from that by the diſpoſition of the flowers and ſeeds, which, of this, grow in a cloſe thick ſpike: It is ſowed in ſeveral parts of Europe, in the fields, as corn for the ſuſtenance of the inhabitants; it is frequently uſed in particular places of Germany, to make bread. *Miller.*—September is drawn with a chearful countenance: in his left hand, a handful of millet, oats, and *pannicle*. *Peacham.*—*Pannick* affords a ſoft demulcent nouriſhment. *Arbuthnot.*

(2.) PANNICLE. See PANNICUM.

PANNICULUS CARNOSUS, in zootomy, a rubuſt, fleſhy tunic, ſituated in beaſts between the ſkin and the fat; by means of which, they can move their ſkin in whole or in part. It is altogether wanting in mankind.

* PANNIER. *n. ſ.* [*panier*, French.] A baſket; a wicker veſſel, in which fruit or other things, are carried on a horſe.—

The worthleſs brute
Now turns a mill, or drags a laded life,
Beneath two *panniers*, and a baker's wife. *Dryd.*

—We have reſolved to take away their whole club in a pair of *panniers*. *Addiſon.*

PANNIPUT, a town of Indoſtan, in Delhi, between the cities of Delhi and Sirhind; ſeated in an extenſive plain, where a moſt bloody battle was fought in 1761, between Abdallah king of Candahar, at the head of 150,000 men, and an army of 200,000 Mahrattas; wherein the latter were defeated with a dreadful carnage, and the loſs of ſeveral of their beſt generals, and an incredible number of priſoners. Panniput lies 72 miles NW. of Delhi, and 70 E. of Hiſſar. Lon. 76. 45. E. Lat. 29. 15. N.

PANNONIA, an extenſive country of Europe, bounded on the E. by Upper Mœſia, S. by Dalmatia, W. by Noricum, and N. by the Danube. It was divided by the ancients into *Upper* and *Lower*, or *Superior* and *Inferior Pannonia*. The boundary between theſe was the Arabo and Mount Cetina; the Upper Pannonia lying on the W. and the Lower on the E. ſide. This diviſion was made about the times of the Antonines. The inhabitants were of Celtic origin. SIRMIUM was the ancient capital of all Pannonia. Philip II. of Macedon, and his ſon Alexander, ſucceſſively conquered the country. It was again invaded by Julius Cæſar, and conquered in the reign of Tiberius. It is now divided into the modern provinces of Boſnia, Carniola, Croatia, March, Sclavonia, and Windiſch; and part of it is contained in Auſtria, Hungary, and Servia. *Lucan.* iii. 95. vi. 220. *Plin.* iii. *Dion. Caſs.* 49. *Strabo*, iv, vii. *Ptol. Tibul.* iv. *el.* 1. 109. *Suet. Aug.* 20. *Jornand. Lempriere.*

PANNONICI, the people of Pannonia.

PANOMI, a town of European Turkey, in Macedon, 16 miles S. of Saloniki.

PANOMPHÆUS, [from παν, *all*, and ομφη, voice,] in antiquity, a deſignation given to Jupiter, becauſe he was ſaid to be the original author of all ſorts of divination, having the books of fate, and out of them revealing either more or leſs, as he pleaſed, to inferior dæmons.

(1.) PANOPEUS, an ancient town of Phocis, between Orchomenos and the Cepheſus. *Pauſ.* x. 4.

(2.) PANOPEUS, a ſon of Phocus and Aſterodia, who accompanied Amphitryon in his war againſt the Teleboans. He was father of Epeus, who made the famous wooden horſe by which Troy was taken.

* PANOPLY. *n. ſ.* [πανοπλια.] Complete armour.—

In arms they ſtood
Of golden *panoply*, refulgent hoſt! *Par. Loſt.*

—We have need to take the chriſtian *panoply*, to put on the whole armour of God. *Ray.*

PANOPOLIS, [Gr. Παν, and πολις, *i. e.* the city of Pan.] an ancient town of Egypt, called alſo *Chemmis* and *Achmim*. See ACHMIM. Pan had a temple in it, where he was worſhipped, and repreſented in a ſtatue, *faſcino longiſſimo et erecto*. *Diod.* v. *Strabo*, 17.

PANORAMA, [Gr. from παν, *all*, and οραμα, *view*, a word recently introduced, to expreſs a painting in oil or water-colours, which repreſents *an entire view* of any country, city, or other natural objects, as they appear to a perſon ſtanding in any ſituation and turning quite round. To produce this effect, the painter or drawer muſt fix his ſtation, and delineate correctly and connectedly; every object which appears as he turns round, concluding his drawing by a connection with where he began.

PANORMITA, Anthony, a native of Palermo in Sicily, one of the moſt learned men of the 15th century. He was ſecretary to Alphonſo, K. of Naples, and was eſteemed the beſt poet of his age. He ſold an eſtate to purchaſe a copy of Livy. He died in 1471.

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(1.) PANORMO, a town of Aſiatic Turkey, in Natolia, on the S. coaſt of the ſea of Marmora, 26 miles SE. of Artaki.

(2.) PANORMO, a town of European Turkey, in Albania, on a gulf of the Adriatic, oppoſite Corfu; 45 miles SSE. of Valona. Lon. 37. 48. E. Ferro. Lat. 40. 0. N.

(1.) PANORMUS, an ancient city of Sicily, built by the Phœnicians, on the NW. coaſt between Lilybæus and Pelorus, with a capacious harbour. It was afterwards a principal town of the Carthaginians, and their ſtrongeſt hold in the iſland. It was at laſt taken with difficulty by the Romans. (*Thucyd. Polib. Mela*, ii, 7. *Ital.* xiv. 262.) It is now called PALERMO.

(2—6.) PANORMUS, the name of other 5 ancient towns: 1. in Achaia, in Peloponneſus, near Cape Rhium: (*Pauſ. Polyb.*) 2. in Crete, on the N. ſide: (*Plin. Ptol*) 3. in Macedonia, on the Ægean Sea; near mount Athos: (*Ptol.*) 4. in Samos: (*Livy.*) 5. in the Thracian Cherſoneſus, on the W. ſide of the Peninſula. *Pliny.*

(7—9.) PANORMUS, 3 ancient ſea ports: 1. in Attica, very capacious: (*Ptol.*) 2. in Epirus, on the coaſt of the Montes Cerauni, below the citadel Chimera: (*Strabo, Ptol.*) 3. in Ionia, near Epheſus, with a temple of Diana. *Strabo.*

PANORPA, the SCORPION FLY, in zoology, a genus of inſects belonging to the order of neuroptera. The roſtrum is horny and cylindrical; there are two pappi, and 3 ſtemonata; the feelers are longer than the thorax. The body is of a black brown colour, yellow on the ſides, with a few ſpots of the ſame on the top. Its tail, formed by the 3 laſt ſegments of the abdomen, is of a maroon colour; of theſe three ſegments, the laſt is largeſt, almoſt round, and terminates in two hooks, which conſtitutes a tail like that of the ſcorpion. The wings, as long as the body, are diaphanus, reticulated with fibres and ſtripes of ſpots of a brown colour. There are different varieties of this inſect, conſiſting in the colour of the wings. Some, inſtead of ſeveral ſtripes of ſpots upon their wings, have only a ſingle black ſtripe, tranſverſe and irregular, on the middle of the wing, the extremity whereof is alſo black: others have their wings entirely white, excepting the extremity, which is black. The forceps that is ſeen at the hinder part of this inſect is uſed by the males to lay hold of their females in their amorous embraces: the threatening tail of the male does no miſchief. This inſect is found in meadows, by the ſides of ditches. There are four ſpecies, diſtinguiſhed by the colour and ſhape of their wings. See *Plate* CCLXVI.

PANOTII, an ancient people of Scythia; ſaid to have had uncommonly large ears. *Plin.* iv, 13.

PANOV, a river of Ruſſia which runs into the Niznei Tunguſka; in Lon. 120. 40. E. Ferro. Lat. 64. 40 N.

PANOUGE, a river of ANOSSI.

PANSA, C. Vibius, a Roman conſul, who, with his colleague, A. Hirtius, purſued Cæſar's murderers, and was killed in a battle near Mutina. Hirtius and Panſa were the two laſt conſuls of the Roman republic, who enjoyed the dignity of chief magiſtrates with full power. The conſular authority after this dwindled into a mere title.

PAN-SIEN-ING, a town of Formoſa, on the W. coaſt. Lon. 137. 38. E. Ferro. Lat. 23. 56. N.

(1.) PANSIES, } or PANCY, in botany, a ſpecies
(1.) PANSY, } of VIOLA.

(2.) * PANSY, *n. ſ.* A flower. See PANCY.

(1.) PANT, a river of England, in Eſſex, which riſes 3 miles SE. of Malden, paſſes Bocking, &c. and runs into the Black-water, 3 miles E. of Braintree.

(2.) * PANT. *n. ſ.* [from the verb.] Palpitation; motion of the heart.—

Leap thou, attire and all,
Through proof of harneſs, to my heart, and there
Ride on the *pants* triumphing. *Shakeſpeare.*

* *To* PANT. *v. n.* [*panteler*, old French.] 1. To palpitate; to beat as the heart in ſudden terror, or after hard labour.—

Yet might her piteous heart be ſeen to *pant*
And quake. *Spenſer.*

The world's profound heart *pants*. *Craſhaw.*—The ſoft *pantings*, which I have always felt when I heard your voice. *Tatler.* 2. To have the breaſt heaving as for want of breath.—

Pluto *pants* for breath from out his cell. *Dryd.*—Miranda will never *pant* under a heavy load of fleſh, till ſhe has changed her religion. *Law.* 3. To play with intermiſſion.—

The whiſp'ring breeze
Pants on the leaves, and dies. *Pope.*

4. To long; to wiſh earneſtly: with *after* or *for*.—They *pant after* the duſt of the earth. *Amos* ii. 7.

Who *pants* for glory, finds but ſhort repoſe;
A breath revives him. *Pope.*

PANTÆNUS, a ſtoic philoſopher, born in Sicily, in the reign of Commodus. He preſided over the celebrated ſchool of Alexandria, and was ſent by Demetrius, biſhop of Alexandria, to inſtruct the Indians. He publiſhed ſome commentaries upon the Bible, which are loſt.

PANTAGYAS, a river on the eaſt coaſt of Sicily, which falls into the ſea, after running in rough cascades over rugged rocks and precipices. *Fitz. Æn.* iii. 689.

PANTALARIA, an iſland in the Mediterranean ſea, between Sicily and the main land of Africa, about 17 miles in circumference. It is near the coaſt of Tunis, and abounds in cotton, fruits, and wine; but the inhabitants are obliged to bring all their corn to Sicily, as it belongs to the king of the two Sicilies. Lon. 12. 25. E. Lat. 36. 55. N.

(1.) * PANTALOON. *n. ſ.* [*pantalon*, Fr.] A man's garment anciently worn, in which the breeches and ſtockings were all of a piece. *Hanmer.*

The ſixth age ſhifts
Into the lean and ſlipper'd *pantaloon*. *Shak.*
The French were conquered once,
Now give us laws for *pantaloons*. *Hudibras.*

(2.) PANTALOON, on the theatre, is a buffoon or maſked perſon, who performs high and groteſque dances, and ſhows violent and extravagant poſtures and airs. The word is likewiſe uſed for the habit or dreſs theſe buffoons uſually wear; which is made preciſely to the form of their body, and all of a piece from head to foot. Hence

theſe

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thoſe who wear a habit of this kind under their other clothes, are called *pantaloons* of Venice.

(1.) PANTANO, a town of Italy, in the dep. of Panaro, and diſtrict (late duchy) of Modena, 15 miles SW. of Modena.

(2.) PANTANO, a river of Naples, in Calabria Ultra, which runs into the ſea, 10 miles E. of Bova.

(3.) PANTANO, a town of Naples, on the above river, 9 miles E. of Bova.

PANTANUS, a lake of Italy, in Magna Græcia, at the mouth of the Frento, in Apulia. (*Plin.* iii. 12.) It is now called LESINA.

PANTARBE, in natural hiſtory, a name given to an imaginary ſtone, the effects of which upon gold were ſimilar to thoſe of the loadſtone upon iron. The ancients, as well as ſome moderns, had an opinion that there was ſuch a ſtone; and the *amphitane* of Pliny is deſcribed as poſſeſſing this remarkable quality; but there is no reaſon, from any experiment, well aſcertained, to believe that there ever was ſuch a ſtone.

* PANTESS. *n. ſ.* [*dyſpnœa.*] The difficulty of breathing in a hawk. *Ainſworth.*

(1.) PANTHEA, the beautiful and virtuous wife of Abradates, King of Suſa. She was taken priſoner by Cyrus the Great, who treated her well, but would not viſit her, leſt he ſhould have been enſnared by her charms. Abradates, hearing of this, laid down his arms, joined Cyrus with all his forces, and fought for him. Being afterwards killed in battle, Panthea killed herſelf on his body, and Cyrus raiſed a monument to their memory. *Xenoph. Cyrop.*

(2.) PANTHEA, *plur. n. ſ.* in antiquity, ſingle ſtatues, compoſed of the figures or ſymbols of ſeveral different divinities together. F. Joubert, who calls them *panthea*, and who has remarked them ſometimes on medals, ſays their heads are moſt commonly adorned with the ſymbols or attributes belonging to ſeveral gods. An inſtance of this appears in a medal of Antoninus Pius; which repreſents Serapis by the buſhel it bears; the ſun, by the crown of rays; Jupiter Ammon, by the ram's horns; Pluto, by the large beard; and Æſculapius, by the ſerpent twiſted in his hand. M. Baudelot, in a diſſertation on the Lares, obſerves, that the *panthea* had their origin from the ſuperſtition of thoſe who, taking ſeveral gods for the protectors of their houſes, united them all in the ſame ſtatue, by adorning it with the ſeveral ſymbols proper to each of theſe deities.

PANTHEISM, *n. ſ.* a philoſophical ſpecies of idolatry leading to atheiſm, in which the univerſe was conſidered as the ſupreme God. Who was the inventor of this abſurd ſyſtem is not known; but it was of early origin, and differently modified by different philoſophers. Some held the univerſe to be one immenſe animal, of which the incorporeal ſoul was properly their god, and the heavens and earth the body of that god: whilſt others held but one ſubſtance, partly active and partly paſſive; and therefore looked upon the viſible univerſe as the only *Numen*. The earlieſt Grecian Pantheiſt of whom we read, was Orpheus, who called the world *the body of God*, and its ſeveral parts *his members*, making the whole univerſe one *divine animal*. According to Cudworth, Orpheus and his followers believed in the immaterial ſoul of the world; therein agreeing with Ariſtotle, who certainly held that God and matter are co-eternal; and that there is ſome ſuch union between them as ſubſiſts between the ſouls and bodies of men. (See METAPHYSICS, *Sect.* XXXV.) With reſpect to the univerſe being God, and all things divine and human being modifications of mere matter, the ſtoics undoubtedly agreed with Anaximander and his followers; for the ſchool of Zeno held but one ſubſtance. This impious doctrine, that all things are God, and that there is but one ſubſtance, was revived in modern times by Spinoza an apoſtate Jew. See PAN, N° 1. and SPINOZA.

(1.) * PANTHEON. *n. ſ.* [πανθειον.] A temple of all the gods.

(2.) PANTHEON, a beautiful edifice at Rome, anciently a temple dedicated to *all the gods*; but now converted into a church, and dedicated to the Virgin and all the martyrs. It is generally thought to have been built by Agrippa, ſon-in-law to Auguſtus, becauſe it has the following inſcription on the friſze of the portico: M. AGRIPPA L. F. COS. TERTIUM. FECIT. Several antiquarians and artiſts, however, have ſuppoſed that the pantheon exiſted in the times of the commonwealth; and that it was only embelliſhed by Agrippa, who added the portico. Be this as it will, however, the pantheon, when perfected by Agrippa, was an exceedingly magnificent building; the form of whoſe body is round or cylindrical; and its roof or dome is ſpherical: it is 144 feet diameter within; and the height of it, from the pavement to the grand aperture on its top, through which it receives the light, is juſt as much. It is of the Corinthian order. The inner circumference is divided into 7 grand niches, wrought in the thickneſs of the wall: ſix of which are flat at the top; but the 7th, oppoſite to the entrance, is arched. Before each nich are two columns of antique yellow marble fluted, and of one entire block, making in all 24, the fineſt in Rome. The whole wall of the temple, as high as the grand cornice, inclufive, is caſed with divers ſorts of precious marble in compartments. The frieze is entirely of porphyry. Above the grand cornice ariſes an attic, in which were wrought, at equal diſtances, 14 oblong ſquare niches: Between each nich were four marble pilaſters, and between the pilaſters marble tables of various kinds. This attic had a complete entablature; but the cornice projected leſs than that of the grand order below. Immediately from the cornice ſprings the ſpherical roof, divided by bands, which croſs each other like the meridians and parallels of an artificial terreſtrial globe. The ſpaces between the bands decreaſe in ſize as they approach the top of the roof; to which, however, they do not reach, there being a conſiderable plain ſpace between them and the great opening. That ſo bold a roof might be as light as poſſible, the architect formed the ſubſtance of the ſpaces between the bands of nothing but lime and pumice-ſtones. The walls below were decorated with lead and braſs, and works of carved ſilver over them; and the roof was covered on the outſide with plates of gilded bronze. There was an aſcent from the ſpringing of the roof

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roof to the very ſummit by a flight of 7 ſtairs. The portico is compoſed of 16 columns of granite, 4 feet in diameter, eight of which ſtand in front, with an equal intercolumniation all along. The aſcent to the portico is by 8 or 9 ſteps. Such was the pantheon, the richneſs of which induced Pliny to rank it among the wonders of the world. The eruption of Veſuvius, in the reign of Tiberius, damaged the Pantheon very conſiderably: it was repaired by Domitian and Adrian. But the pantheon is more indebted to Septimius Severus, than to any one ſince its erection. Septimius beſtowed eſſential reparations upon it, as appears from an inſcription upon the architrave. The temple ſubſiſted in all its grandeur till the incurſion of Alaric. Zozymus relates, that the Romans having engaged to furniſh this barbarian prince with 3000lb. of gold, and 5000lb. of ſilver, upon condition that he ſhould depart from their walls, and it being impoſſible to raiſe thoſe ſums, they ſtript the temples of their ſtatues and ornaments of gold and ſilver. Genſeric king of the Vandals 39 years after took away part of their marbles; and loaded one of his ſhips with ſtatues. On this occaſion the ineſtimable works of Diogenes became the prey of this barbarian. The Chriſtian emperors had iſſued edicts for demoliſhing the Pagan temples. But the Romans ſpared the pantheon, which ſuffered no damage from the zeal of the pontiffs, or the indignation of the ſaints, before the firſt ſiege of Rome by Alaric. It remained ſo rich till about A. D. 655, as to excite the avarice of Conſtantine II. who came from Conſtantinople and pillaged the pantheon of its brazen coverings, which he tranſported to Syracuſe, where they ſoon after fell into the hands of the Saracens. About 50 years before this, pope Boniface IV. had obtained the pantheon of the emperor Phocas, to make a church of it. The artiſts of theſe days ſpoiled every thing they laid their hands upon. After the devaſtations committed by the barbarians, Rome was contracted within a narrow compaſs. The pantheon ſtanding at the entrance of the Campus Martius, was ſurrounded with houſes, which ſpoiled the fine proſpect of it; and ſome of them were built cloſe to its walls. Pedlars ſhades were built within its portico, and the intercolumniations were bricked up to the irreparable damage of the matchleſs pillars, of which ſome loſt part of their capitals, and others were chiſſeled out 6 or 7 inches deep, and as many feet high, to let in poſts. This diſorder continued till the pontificate of Eugene IV. who had all the houſes cleared away, and ſo the miſerable barracks in the portico were knocked down. Benedict II. covered it with lead, which Nicholas V. renewed in a better ſtyle. Raphael Urban, who had no equal as a painter, and as an architect no ſuperior, left a conſiderable ſum by his will for the reparation of the pantheon, where his tomb is placed. La Vagua, Udino, Hannibal Carracci, Flamingo Vacca, and Archangelo Corelli, did the ſame. Pope Urban VIII. was a protector and practiſer of the arts. He repaired it; but while he built up with one hand, he pulled down with the other. He cauſed two belfries of a wretched taſte to be erected on the ancient front work, and he diveſted the portico of all the remains of its ancient grandeur, viz. the brazen coverture of the croſs beams, which amounted to a prodigious quantity. This pope, who was of the family of Barbarini, preſented as much of this metal to his nephew as was ſufficient for the decoration of his new palace; on which occaſion this paſquinade was ſtuck up:

Quod non fecerunt Barbari fecere Barbarini.

Alexander VII. did what Urban had neglected to do. He ordered ſearch to be made for pillars to match thoſe of the portico of the pantheon; and ſome were found of the very ſame model. He alſo cauſed all the old houſes before the portico to be pulled down, and the rubbiſh to be cleared away which covered the ſteps, and the baſes of the pillars. Clement IX. incloſed the portico within iron rails. Several later popes have added to its decorations, which were all in the taſte of the times they were done in; and the body of the edifice and its architecture gained nothing from them.

(3.) PANTHEON, the name of another temple at Rome, dedicated to Minerva, as the goddeſs of medicine. It was in the form of a decagon, and the diſtance from one angle to another meaſured 22 feet and an half. Between the angles there were 9 round chapels, each of which was deſigned for a deity; and over the gate there was a ſtatue of Minerva.

(4.) PANTHEON. In the Eſcurial is a magnificent chapel, called *pantheon*, 35 feet in diameter, and 38 feet high from the pavement, which is compoſed of marble and jaſper inlaid. The whole inſide of the chapel is of black marble, except the luthern, and ſome ornaments of jaſper and red marble. In this chapel are depoſited the bodies of the kings and queens; there are only places for 26, and 8 of them are already filled.

(5.) *The* PANTHEON OF ATHENS was in many reſpects little inferior to the Roman one built by Agrippa. The Greek Chriſtians alſo converted it into a church, dedicated it to the Virgin, under the name of *Panegia*; and the Turks changed it into a moſque.

(6.) *The* PANTHEON OF NISMES was a temple in that city, wherein were 12 niches or ſtatues, ſuppoſed to have been deſtined for the 12 great gods.

(7.) PANTHEON, in literary hiſtory, a name aſſumed by a ſpeculative Society, eſtabliſhed at Edinburgh for public debate upon various ſubjects, and carried on for above 20 years. It was firſt inſtituted in December 1770, or 1771, by a number of young gentlemen, moſtly engaged in the ſtudies of law, phyſic, or divinity, under the name of the *Debating Society*, and held for upwards of two years in St John's Lodge, Canongate. But ſome differences having ariſen among the members, reſpecting its management, a ſchiſm took place, and the principal ſpeakers erected a new Society under the name of the *Pantheon*, in the end of 1773; which met weekly, firſt in St Giles's Lodge, and afterwards in Mary's Chapel, for above 18 years. The objects of the inſtitution were to mingle the *utile* with the *dulce*;—public improvement with public amuſement, by accuſtoming the members and all viſitors, who inclined to take part in the debates, to a facility in public

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public speaking. Such an inſtitution, it was ſometimes remarked, had it been eſtabliſhed in London, in the early years of the celebrated Mr Addiſon, would, in all probability, have accuſtomed him to deliver himſelf with eaſe, and have prevented his failure in the only public oration he ever attempted to make. The ſubjects were extremely various;—literary, ſpeculative, philoſophical, moral, hiſtorical, biographical, political, and ſometimes religious. A ſubject, in the form of an alternative queſtion, was announced from the chair, at the one meeting, diſcuſſed at the next, and at the concluſion of the debate, decided by a vote of the company. The Society was for many years extremely popular, and often very much crowded by Ladies and Gentlemen of the firſt rank. Divines, phyſicians, writers to the ſignet, advocates, Baronets, Members of Parliament, and even Peers, honoured it with their attendance, and occaſionally took part in the debates; on which occaſions they were admitted honorary members. On queſtions of public importance, very capital orations were delivered in it. Its popularity was not a little increaſed by that part of its conſtitution, which devoted its funds, after paying the neceſſary charges, to charity; particularly to the relief of literary people. Theſe funds aroſe chiefly from the weekly contribution of ſixpence paid by each viſitor for admiſſion. The chief cauſe of its being given up, and the debates ſuſpended, was the political ferment that took place in the public mind, in 1792-2, in conſequence of the French Revolution. Accordingly, it was thought improper to continue a Society, the laws of which authoriſing full *freedom of debate*, ſeditious or treaſonable perſons might have made an unjuſtifiable uſe of this privilege; and no meeting has been held ſince 1791.

(1.) * PANTHER. *n. ſ.* [πανθηρ; *panthera*, Lat. *panthere*, Fr.] A ſpotted wild beaſt; a leopard.—

An' it pleaſe your majeſty,
To hunt the *panther* and the hart with me.
Shak.

—Pan, or the univerſal, is painted with a goat's face, about his ſhoulders a *panther's* ſkin. *Peacham.*—

The *panther's* ſpeckled hide
Flow'd o'er his armour with an eaſy pride.
Pope.

(2.) PANTHER, in zoology. See FELIS, N° XXIV.

PANTHOIDES, a patronymic of Euphorbus, the ſon of Panthous; applied alſo to PYTHAGORAS, who pretended that the ſoul of that hero had tranſmigrated into his body. See EUPHORBUS.

PANTICAPÆUM, an ancient town of Taurica Cherſoneſus, built by the Mileſians, and governed by its own laws, till it was conquered by the kings of Boſphorus, and became their capital. Mithridates the Great died in it. *(Pliny, Strabo.)* It is now called *Kerche*.

PANTICAPAS, a river of European Scythia, which runs into the Boryſthenes; ſuppoſed to be the modern SAMARA. *Herodot.* iv, 54.

PANTICOSA, a town of Spain, in Arragon.

PANTIKA, a town of Aſiatic Turkey, in Natolia; on the NE. coaſt of the ſea of Marmora; 12 miles SE. of Conſtantinople.

* PANTILE. *n. ſ.* A gutter tile.

(1.) PANTIN, a town of France, in the dep. of Paris, and diſtrict of St Denis; 3 miles ENE. of Paris.

(2, 3.) PANTIN, William, a learned phyſician at Bruges, who publiſhed a commentary upon *Celſus de re Medica*, in 1552, at Baſil. He died in 1552. His nephew, Peter Pantin, of Thiel, taught languages at Louvain and Toledo.

PANTING. *part. n. ſ.* conſiſts in a rapid ſucceſſion of inſpirations and expirations, which happens when we run or perform any violent motion.

* PANTINGLY. *adv.* [from *panting*.] With palpitation.—

She heav'd the name of father
Pantingly forth, as if it preſt her heart. *Shak.*

* PANTLER. *n. ſ.* [*panetier*, French.] The officer in a great family, who keeps the bread. *Hanmer.*—

When my old wife liv'd,
She was both *pantler*, butler, and cook. *Shak.*

—He would have made a good *pantler*. *Shak.*

* PANTOFLE. *n. ſ.* [*pantoufle*, French; *pantofola*, Italian.] A ſlipper.—Melpomene has on her feet, her high cothurn or tragick *pantoſles* of red velvet and gold, beſet with pearls. *Peacham.*

(1.) * PANTOMIME. *n. ſ.* [πας and μιμος; *pantomime*, Fr.] 1. One who has the power of univerſal mimickry; one who expreſſes his meaning by mute action; a buffoon.—

Not that I think thoſe *pantomimes*,
Who vary action with the times,
Are leſs ingenious in their art,
Than thoſe who duly act one part. *Hudibras.*

2. A ſcene; a tale exhibited only in geſture and dumb ſhew.—He put off the repreſentation of *pantomimes* till late hours, on market days. *Arbuthnot.*

(2.) PANTOMIMES made a part in the theatrical entertainments of the ancients; their chief employment was to expreſs, in geſtures and action, whatever the chorus ſung, changing their countenance and behaviour as the ſubject of the ſong varied. They were very ancient in Greece, being derived from the heroic times, according to ſome; but however this may be, they were certainly known in Plato's time. In Rome, it was ſo late as the time of Auguſtus before they made their appearance. As to their dreſs, it was various, being always ſuited as near as poſſible to that of the perſon they were to imitate. The crocota was much uſed among the Roman pantomimes, in which and other female dreſſes they perſonated women.

(1.) * PANTON. *n. ſ.* A ſhoe contrived to recover a narrow and hoof-bound heel. *Farrier's Dict.*

(2.) PANTON, in geography, a townſhip of Vermont, in Addiſon county, on the E. bank of Lake Champlain, between Addiſon and Ferriſburg, 87 miles N. of Bennington.

(3.) PANTON, a town of Lincolnſhire, near Anceſter.

PAN-

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PANTONA, a town of Italy, in the department of Panaro, district, and late duchy of Modena.

* PANTRY. *n. f.* [*paneterie*, Fr. *panarium*, Lat.] The room in which provisions are reposited.—The Italian artizans distribute the kitchen, *pantry*, bake-house, under ground. *Wotton.*—What work they make in the *pantry* and the larder. *L'Estr.*—He shuts himself up in the *pantry* with an old gypsy. *Spectator.*

PAN-TSEE. See CHINA, § 29.

(1.) PANUCO, or GUASTECA, a province of N. America, lying N. of Mexico, bounded on the E. by the Gulf of Mexico, S. by Mexico, and on the W. by the prov. of Mechoacan and New Biscay. The tropic of Cancer divides it, on each side of which it extends 55 leagues. The part nearest Mexico has mines of gold and of rock salt, and abounds with provisions. The rest of it is barren.

(2.) PANUCO, a river in the above province, which is navigable by large ships a great way above the town, (N° 3.) but a bar before the harbour prevents ships of burden from entering it.

(3.) PANUCO, the capital of the above province, is seated on the river (N° 2.), 31 miles above its mouth, on the W. coast of the Gulf of Mexico. It is a bishop's see, and contains about 500 families, or 2000 people; whose chief emoluments arise from the gold mines and salt works. It lies 192 miles NNE. of Mexico. Lon. 99. 50. W. Lat. 23. 50. N.

PANVINUS, Onuphrius. See ONUPHRIUS.

PANXFORD, a town of England, in Norfolk, between Norwich and S. Waltham.

PANYASIS, an ancient Greek poet, uncle of the historian Herodotus. He celebrated Hercules and the Ionians in his poems, and was universally admired. *Lempriere.*

PANZA, a town of Congo, in Pamba.

PANZACCHIA, Maria Helena, an Italian painteress, born at Bologna, in 1668, of a noble family. She learned design under Emilio Taruffi, and in a short time, acquired great readiness in composition, correctness of outline, and a lovely tint of colouring. She also excelled in painting landscapes; and her works were exceedingly prized.

PANZEN, a town of Bohemia, in Leitmeritz; 6 miles SSW. of Klamnitz.

(1.) PAO, a town of China, in Se-tchuen.

(2.) PAO, a town of Corea, 30 miles SE. of Outchuen.

(3.) PAO DE NAO, a town of Africa, near the Camarones, belonging to the Portuguese.

PAO-KING, a city of China of the first rank, in Hou-quang; 832 miles SSW. of Peking. Lon. 128. 46. E. Peyo. Lat. 27. 4. N.

PAOLI, Hyacynth, a Corsican of a good family. Having acquired reputation, he was elected one of the chief magistrates of the island, in 1735. But the various revolutions Corsica underwent, and the oppressions of the Genoese, obliged him to retire to Naples with his family; whence, in 1755, he sent his celebrated son, Pascal Paoli, then in his 29th year, to assist his countrymen in regaining their liberty, who was appointed by them commandant General on his arrival.

(1.) PAOLO, Marc. See PAULO.

(2.) PAOLO, ST, a town of Italy, in the department of the Panaro, district and late duchy of Modena; seated on the river Crostola, in a fertile country.

PAOLUCCIO, Paul Anafestus, the first doge or duke of Venice. He was elected in 697, and died in 717. See VENICE.

PAO-NGAN, 2 towns of China, of the 3d rank, in Chensi, and Pe-tche-li.

PAO-NING, a city of China, of the first rank, in the prov. of Se-tchuen, on the Kialing; 700 miles SSW. of Peking.

PAOOM, one of the New Hebrides, in the South Sea, lying S. of Mallicollo. Lon. 168. 29. E. Lat. 16. 30. S.

PAOS, a town of Portugal, in Beira.

PAO-TING, in China, where the viceroy resides, is the most considerable city in the province next to Peking. It has 20 others under its jurisdiction, 3 of the 2d, and 17 of the 3d class. The country around it is pleasant, and equal in fertility to any part of China. It is on the road from Pekin to the province of Chan-si.

PAOULA, a town of Naples, in Principato Ultra; 4 miles NE. of Benevento.

PAO-YN, a town of China, of the 3d rank, in the province of Kiang-nan.

* PAP. *n. f.* [*pappa*, Italian; *pappe*, Dutch; *papilla*, Latin.] 1. The nipple; the dug sucked.—

Great dame nature, from whose fruitful *pap*,
Their well-heads spring. *Spenser.*

Out sword, and wound
The *pap* of Pyramus—

Ay, that left *pap*, where heart doth hop. *Shak.*

An infant making to the *paps* would press,
And meets instead of milk, a falling tear. *Dryd.*

—In weaning young creatures, the best way is never to let them suck the *paps*. *Ray on the Creation.*—That Timothy Trim, and Jack were the same person, was proved, particularly by a mole under the left *pap*. *Arbuthnot.* 2. Food made for infants, with bread boiled in water.—

Steep them a little, *pap* content is making.
Sidney.

We must not starve, nor hope to pamper her
With woman's milk and *pap* unto the end.
Donne.

—Let the powder, after it has done boiling, be well beaten up with fair water to the consistence of thin *pap*. *Boyle.* 3. The pulp of fruit. *Ainsw.*

(1.) * PAPA. *n. f.* [παππας; *papa*, Lat.] A fond name for father, used in many languages.—Where there are little masters and misses in a house, bribe them, that they may not tell tales to *papa* and mamma. *Swift.*

(2.) PAPA, in geography, a small but strong town of Lower Hungary, in the county of Veiprin. In 1596 the garrison revolted to the Turks, but it was soon retaken by Matthias. It again revolted, and was again retaken from the Turks in 1683, and is subject to the house of Austria. It is seated on a mountain, near the Marchacz; 45 miles W. of Buda. Lon. 18. 20. E. Lat. 47. 26. N.

(3.) PAPA, or PAPA STOUR, i. e. *Great Papa*,

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an iſland of Scotland, in Shetland, a mile weſt of Main-land, in the pariſh of Walls and Sandneſs, about two miles long, and above one broad. The ſurface is level, the ſoil ſandy; but in a good ſeaſon, when well manured with ſea-ware, yields rich crops of barley, oats, and potatoes, as well as excellent graſs. It has ſeveral ſmall harbours, which afford ſafe ſhelter for the fiſhing boats, and the beaches are convenient for drying the fiſh. Theſe advantages have induced a great fiſhing company from Northumberland to erect drying houſes upon it, and ſend veſſels to the fiſhing. In 1792 it had 285 inhabitants. It has a ſingular cave through which the ſea flows far under the rocks.

(4.) PAPA, or PAPA STRONSAY, an iſland of Orkney, half a mile NE. of Stronſay, and three miles in circumference. The ſurface is level, and the ſoil ſo fertile, that with little improvement it might be rendered one continued corn-field. There are ruins of two chapels on it, dedicated to St Nicholas and St Bridget. Mid-way between theſe is an eminence called *Earl's Know*, which has many graves, containing uncommonly large human bones.

(5.) PAPA, or PAPA WESTRAY, an iſland of Orkney, 3 miles NE. of Weſtray, and 25 from Kirkwall; 4 miles long, and one broad. Its form is oval; and the ſoil is ſo very fertile, that it is reckoned the beſt arable and paſture-land in the Orkneys. It is divided into 24 plough-gates, and contained 240 inhabitants in 1792. About 76 tons of kelp are manufactured annually.

(6.) PAPA SOUND, a ſmall bay of Stronſay, between Stronſay and PAPA, N° 2.

* PAPACY. *n. ſ.* [*papat*, *papauté*, Fr. from *papa*, the pope.] Popedom; office and dignity of biſhops of Rome.—Now there is aſcended to the *papacy* a perſonage, that though he loves the chair of the *papacy* well, yet he loveth the carpet above the chair. *Bacon.*

PAPADONISIA. See PAPAS ADASSI.

PAPÆUS, a name of Jupiter, among the Scythians. *Herodotus.*

PAPAGAYO BAY, a bay of the Pacific Ocean, on the weſt coaſt of North America, and province of Nicaragua. Lon. 69. 50. W. Ferro. Lat. 11. 10. N.

* PAPAL. *adj.* [*papal*, French.] Popiſh; belonging to the pope; annexed to the biſhopric of Rome. —This *papal* indulgence hath been the cauſe of ſo many hundred thouſands ſlain. *Raleigh.*

PAPALOAPAIN, the largeſt river of Guaxaca, in Mexico. It riſes in the Zoncoiucan Mountains, and falls into the North Pacific Ocean.

(1.) PAPAS ADASSI, PAPADONISIA, or PRINCE'S ISLANDS, a cluſter of iſlands on the NE. coaſt of the iſlands of Marmora, at the entrance of the Straits of Conſtantinople; eight miles ſouth of that city.

(2.) PAPAS ILI, a town of European Turkey, in Romania; 32 miles N. of Adrianople.

PAPAVER, the POPPY. See BOTANY, *Index.* A genus of the monogynia order, belonging to the polyandria claſs of plants, and in the natural method ranking under the 27th order, *Rhoeadæ*. The corolla is tetrapetalous; the calyx diphyllous; the capſule bilocular, opening at the pores below a perſiſting ſtigma.

1. PAPAVER ALBUM, or SOMNIFERUM, the *white*, or *ſomniferous garden poppy*, riſes with an upright ſmooth ſtalk, dividing or branching a yard or more high; garniſhed with large, deeply jagged, amplexicaule, ſmooth leaves; and terminated by large, ſpreading, dark purple, and other coloured flowers, in the varieties, having ſmooth cups and capſules. There are many varieties, ſome of them extremely beautiful. The white officinal poppy is one of the varieties of this ſort. It grows often to five or ſix feet, having large flowers, both ſingles and doubles, ſucceeded by capſules or heads as large as oranges, each containing about 8000 ſeeds. In the province of Bahar, in the Eaſt Indies, the poppy ſeeds are ſown in October and November, at about eight inches diſtance, and well watered, till the plants are about half a foot high, when a compoſt of dung, nitrous earth, and aſhes is ſpread over the areas; and a little before the flowers appear they are again watered profuſely till the capſules are half grown, at which time the opium is collected; for when fully ripe, they yield but little juice; two longitudinal inciſions from below upwards, without penetrating the cavity, are made at ſunſet for 3 or 4 ſucceſſive evenings; in the morning the juice is ſcraped off with an iron ſcoop, and worked in an iron pot in the ſun's heat till it is of a conſiſtence to be formed into thick cakes of about 4 lb. weight; theſe are covered over with the leaves of poppy, tobacco, or ſome other vegetable, to prevent their ſticking together, and in this ſituation they are dried. The ſomniferous quality of the poppy reſides in the milky juice of the capſule. See OPIUM. It grows in England, generally in neglected gardens, or uncultivated rich grounds, and flowers in July and Auguſt. This ſpecies is ſaid to have been named *white poppy* from the whiteneſs of its ſeeds; a variety of it, however, is well known to produce black ſeeds; the *double-flowered white poppy* is alſo another variety; but for medicinal purpoſes, any of theſe may be employed indiſcriminately, as there is no difference in their ſenſible qualities or effects. The ſeeds, according to ſome authors, poſſeſs a narcotic power, but there is no foundation for this opinion; they conſiſt of a ſimple farinaceous matter, united with a bland oil, and in many countries are eaten as food. As a medicine, they have been uſually given in the form of emulſion, in catarrhs, ſtrangurles, &c. The heads or capſules of the poppy, which are directed for uſe in the pharmacopœias, like the ſtalks and leaves, have an unpleaſant ſmell, ſomewhat like that of opium, and an acrid bitteriſh taſte. Both the ſmell and taſte reſide in a milky juice, which more eſpecially abounds in the cortical part of the capſules, and in its concrete ſtate conſtitutes the officinal opium. Theſe capſules are powerfully narcotic or anodyne; boiled in water, they impart to the menſtruum their narcotic juice, together with the other juices which they have in common with vegetable matters in general. The liquor, ſtrongly preſſed out, ſuffered to ſettle, clarified with whites of eggs, and evaporated to a due conſiſtence,

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yields an extract which is about $\frac{1}{7}$th or $\frac{1}{8}$th of the weight of the heads. This poſſeſſes the virtues of opium, but requires to be given in double its doſe to anſwer the ſame intention, which it is ſaid to perform without occaſioning a nauſea and giddineſs, the uſual effects of opium. This extract was firſt recommended by Mr Arnot; and a ſimilar one is now received in the Edinburgh Pharmacopœia. It is found very convenient to prepare the ſyrup from this extract, by diſſolving one drachm in two pounds and a half of ſimple ſyrup. The *ſyrupus papaveris albi*, as directed by both colleges, is a uſeful anodyne, and often ſucceeds in procuring ſleep, where opium fails; it is more eſpecially adapted to children. White poppy heads are alſo uſed externally in fomentations, either alone, or more frequently added to the decoction *pro fomento*. See *Plate* CCLXVI.

2. PAPAVER CAMBRICUM, the *Welch poppy*, has a perennial root, pinnated cut leaves, ſmooth, upright, multiflorous ſtalks, a foot and a half high; garniſhed with ſmall pinnated leaves, and terminated by many large yellow flowers, ſucceeded by ſmooth capſules.—It flowers in June.

3. PAPAVER DUBIUM. See N° 5, and BOTANY, *Index*.

4. PAPAVER ORIENTALE, the *oriental poppy*, hath a large, thick, perennial root; long, pinnated, ſawed leaves; upright, rough, uniflorous ſtalks, terminated by one deep red flower, ſucceeded by oval, ſmooth capſules. The flowers appear in May.

5. PAPAVER RHOEAS, the *wild globular-headed poppy*, riſes with an upright, hairy, multiflorous ſtalk, branching a foot and an half high; garniſhed with long, pinnatified, deeply cut, hairy leaves; the ſtalk terminated by many red and other coloured flowers in the varieties, ſucceeded by globular ſmooth capſules. See *plate* CCLXVII. This plant is common in corn fields, and flowers in June and July. It may be diſtinguiſhed from the PAPAVER DUBIUM, to which it bears a general reſemblance, by its urn-ſhaped capſules, and by the hairs upon the peduncles ſtanding in a horizontal direction. The capſules of this ſpecies, like thoſe of the ſomniferum, contain a milky juice, of a narcotic quality, but the quantity is very inconſiderable, and has not been applied to any medical purpoſe; but an extract prepared from them has been ſucceſsfully employed as a ſedative. The flowers have ſomewhat of the ſmell of opium, and a mucilaginous taſte, accompanied with a ſlight degree of bitterneſs. A ſyrup of theſe flowers is directed in the London Pharmacopœia, which has been thought uſeful as an anodyne and pectoral, and is therefore preſcribed in coughs and catarrhal affections; but it ſeems valued rather for the beauty of its colour than for its virtues as a medicine.—All the kinds are hardy, and will proſper any where. The firſt and laſt ſpecies being annual, are to be propagated only by ſeeds; but the others by parting the roots as well as by ſeeds.

* PAPAVEROUS. *adj.* [*papavereus*; from *papaver*, Lat. a poppy.] Reſembling poppies.—Mandrakes afford a *papaverous* and unpleaſant odour, whether in the leaf or apple. *Brown.*

(1.) * PAPAW. *n. ſ.* [*papaya*, low Lat. *papaya*, *papayer*, Fr.] A plant:—

The fair *papaw*,
Now but a ſeed, preventing nature's law,
In half the circle of the hafty year,
Projects a ſhade, and lovely fruits does wear.
Waller.

(2.) PAPAW, in botany. See CARICA.

(3.) PAPAW, N. AMERICAN. See ANNONA, N° 8.

PAPAYA. See CARICA, N° 1.

PAPAZLI, a town of European Turkey, in Romania, 12 miles ESE. of Philippopoli.

PAP-CASTLE, an ancient caſtle of England, in Bridekirk pariſh, Cumberland, which ſtood two miles from Cockermouth, on the other ſide of the Darwent, whoſe Roman antiquity is proved by ſeveral monuments; and a large green ſtone veſſel found here, with little images upon it, is ſuppoſed to have been formerly a Daniſh font for dipping of infants; and has been ſince uſed at Bridekirk in the neighbourhood for ſprinkling. The name of *Pap-caſtle* ſeems to be contracted from *Pipard* its owner; it is ſaid to have been demoliſhed, and the materials employed to build Cockermouth caſtle. Mr Routh, in a letter to Mr Gale, thus deſcribes the ruins diſcovered at Pap-caſtle, Jan. 16. 1743. "The cloſe in which they lay is a little to the S. of the fort, on the declivity of the hill to the river, and bounded on the W. by a narrow lane, probably the *via militaris* continued; and is uſually ſhown to ſtrangers as the moſt remarkable here for finding Roman coins. They are the largeſt ruins ever known to be diſcovered in theſe parts; for they met with three walls, beſides the pavement." Mr Routh, in another letter to Mr Gale, April 13, 1743, deſcribes a fibula, a coin of Trajan found in it. Dr Stukely ſays, the Roman caſtrum lies on the top of the hill above the village, and he traced its whole circumference, a bit of the Roman wall by the river ſide going to Wigton, and there the ditch is plainly viſible, though half filled up with the rubbiſh of the wall. Coins of Claudius, Adrian, and a ſilver Geta, PONT. *rev.* PRINCEPS IVVENTVTIS, were alſo found in it. He ſuppoſes its ancient name *Derventio*, derived from the Derwent.

PAPEMBERG, an iſland of Japan, conſiſting of a mountain ſurrounded by the ſea. The Dutch ſhips anchor on its coaſt, and wait for a fair wind, when they wiſh to return to Batavia. The Japaneſe name is TARABOCO.

(1.) * PAPER. *n. ſ.* [*papier*, French; *papyrus*, Latin.] 1. Subſtance on which men write and print; made by macerating linen rags in water, and then grinding them to pulp, and ſpreading them in thin ſheets.—

I have ſeen her unlock her cloſet, take forth
paper. *Shak.*

2. Piece of paper.—'Tis as impoſſible to draw regular characters on a trembling mind, as on a ſhaking *paper*. *Locke*. 3. Single ſheet printed, or written. It is uſed particularly of eſſays or journals, or any thing printed on a ſheet. [*Feuille volante*.]—

What ſee you in thoſe *papers*, that you loſe

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So much complexion? look ye how they change!
Their cheeks are *paper*. *Shak.*

1. It is uſed for deeds of ſecurity, or bills of reckoning.—He was ſo careleſs after bargains, that he never received ſcript of *paper* of any to whom he ſent, nor bond of any for performance of covenants. *Fell.*—Nothing is of more credit or requeſt, than a petulant *paper*, or ſcoffing verſes. *Ben Jonſon.*—

They brought a *paper* to me to be ſign'd.
Dryden.
Do the prints and *papers* lie? *Swift.*

(2.) PAPER is evidently derived from the Greek παπυρος, PAPYRUS, the name of that celebrated Egyptian plant which was ſo much uſed by the ancients in all kinds of writing.

(3.) * PAPER. *adj.* Any thing ſlight or thin. There is but a thin *paper* wall between great diſcoveries and a perfect ignorance of them. *Burnet.*

* *To* PAPER. *v. a.* [from the noun.] To regiſter.—

He makes up the file
Of all the gentry; and his own letter
Muſt fetch in him the *papers*. *Shak.*

PAPER HANGINGS. See PAPER-MAKING. *Sect.* III.

PAPER MACHIE. See PAPER.

* PAPER-MAKER. *n. ſ.* [*paper* and *maker*.] One who makes paper.

PAPER-MAKING.

PAPER-MAKING, *n. ſ.* hardly requires to be defined, the art of making paper; which is one of the moſt uſeful arts that ever mankind invented. Before we proceed to the hiſtory of this art, it will be proper to give ſome account

§ I. *Of the* VARIOUS MATERIALS *uſed for* MAKING, *or as* SUBSTITUTES *for* PAPER.

It is unneceſſary particularly to deſcribe the different expedients which men in every age and country have employed for giving ſtability to their ideas, and for handing them down to their children. When the art of writing was once diſcovered, ſtones, bricks, leaves of trees, the exterior and interior bark, plates of lead, wood, wax, and ivory, were employed. In the progreſs of ſociety, men have invented the Egyptian paper, paper of cotton, paper manufactured from the bark of trees, and in our times from old rags.

The inhabitants of Ceylon, before the Dutch made themſelves maſters of the iſland, wrote on the leaves of the talipot. The manuſcript of the Iramins, ſent to Oxford from Fort St George, is written on the leaves of a palm of Malabar. Hernan ſpeaks of another palm in the mountains of that country which produces leaves of ſeveral feet in breadth. RAY, in his *Hiſtory of Plants*, Vol. II. Book xxxii. mentions ſome trees both in India and America, the leaves of which are proper for writing. From the interior ſubſtance of theſe leaves they draw a whitiſh membrane, large, and ſomewhat like the pedicle of an egg; but the paper made by art, even of the coarſeſt materials, is much more convenient in uſe than any of theſe leaves.

The SIAMESE, for example, make two kinds of paper, the one black, and the other white, from the bark of a tree which they call *Pliokkloi*. Theſe are fabricated in the coarſeſt manner; but they can be uſed on both ſides with a bodkin of fullers earth.

The nations beyond the Ganges make their paper of the bark of many trees. The other Aſiatic nations within the Ganges, excepting thoſe toward the ſouth, make it of old rags of cotton cloth; but from their ignorance of the proper method, and the neceſſary machinery, their paper is coarſe. This, however, is by no means the caſe with that made in China and Japan, which deſerves attention, from the beauty, regularity, ſtrength, and fineneſs of its texture. In Europe they have carried to perfection the ingenious art of making paper with old rags, originally either from flax or hemp; and ſince this diſcovery, the paper produced from our manufactures is ſufficient for every purpoſe. But though theſe materials have been hitherto abundant, ſeveral philoſophers have attempted to ſubſtitute other vegetable ſubſtances in their place. In the 6th volume of the Tranſactions of the Society for the Encouragement of Arts, we have an account of paper made by Mr Greeves near Warrington, from the bark of willow twigs; and it has been obſerved by a ſociety of able critics, that hop-buds would probably anſwer this purpoſe better.

About the year 1799, a very large mill was erected in the neighbourhood of London, for the purpoſe of manufacturing paper from STRAW; an idea which, it is probable, was ſuggeſted by the then very high price of linen rags: perhaps ſufficient time has not yet elapſed to aſcertain the utility of this invention.

The rags in common uſe for paper-making, are a texture of ſupple and ſtrong fibres ſeparated by a lee from the bark of the plants. It would be in vain to employ the whole body of the plant, as this ſubſtance forms a very improper ſtuff for the operations of the paper-mill. From theſe principles we are directed in the choice of vegetable ſubſtances fit for the preſent purpoſe. The greater or leſs degree of purity in the materials is not abſolutely neceſſary; for flax itſelf, without any preparation, could be made into paper; but it would be extremely coarſe, and the bark of nettles or malloes would not bear the expenſe of labour. Although cotton be uſed in the fabrication of paper in the Levant, and perhaps in China, we are not to conclude that the down of plants in Europe, without the ſtrength or ſuppleneſs of cotton, will anſwer the ſame purpoſe.

The chief kinds of paper which merit attention are, 1. The Egyptian paper; 2. The paper made from cotton; 3. Paper from the interior barks of trees or liber; 4. Chineſe paper; 5. Japaneſe paper; 6. Paper made from aſbeſt; and, 7. Paper made from linen rags.

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§ II. History of Paper-Making.

The Egyptian paper is the famous paper uſed by the ancients, which was made of a kind of reed called *papyrus*, growing in Egypt on the banks of the Nile. It is not certain at what particular period the ancients began to make paper of papyrus; but there are ſeveral authorities which prove the uſe of it in Egypt long before the time of Alexander the Great.

Pliny, (lib. xiii. cap. 11, 12.) gives a deſcription of the ſimple proceſs of making this paper in Egypt. They divide, ſays he, with a kind of needle, the ſtem of the papyrus into thin plates or ſlender pellicles, each of them as large as the plant will admit. As they were ſeparated from the reed, they were extended on a table, and laid acroſs each other at right angles. In this ſtate they were moiſtened by the water of the Nile, and while wet, were put under a preſs, and afterwards expoſed to the rays of the ſun.

This paper was an important branch of commerce to the Egyptians, which continued to increaſe towards the end of the Roman republic, and became ſtill more extenſive in the reign of Auguſtus. According to Mabillon, the paper of Egypt was uſed in France and Italy, and other European countries. It is ſtill a queſtion at what particular period the fabrication of it totally ceaſed. Whoever wiſhes for a fuller account of the paper of Egypt may conſult Pliny, lib. xiii. Theophraſtus, lib. iv. chap. ix. Guillandinus, Scaliger, Saumaiſe, Kerchmayer, Nigriſoli, Hardouin's Pliny; Mabillon's *De re Diplomat.*; Montfaucon's *Paleography*, and *Collections*; Maffei's *Iſtor. Diplomat.*; Count Caylus, in the *Mem. of the Acad. of Inſcrip.* and Mr *Bruce's Travels* in Abyſſinia.

It is generally ſuppoſed that the invention of the paper called *charta bombycina*, ſupplanted the Egyptian paper in Greece. This paper is incomparably more laſting, and better calculated for all the purpoſes of writing. It is not preciſely known at what period this art, which ſuppoſes a great variety of previous experiments, was firſt reduced to practice, but Montfaucon proves, by inconteſtable authorities, that paper from cotton was in uſe in 1100. The paper produced from cotton is extremely white, very ſtrong, and of a fine grain. From the pellicle, or inner coat, found in many trees between the bark and the wood, the ancients made a paper. The trees commonly in uſe were the maple, the plane-tree, the elm, the beech, the mulberry, and moſt frequently the lindin-tree. The ancients wrote on this inner coat after they had ſeparated it from the bark, beat, and dried it. There are many palm trees in India and America to which botaniſts have given the name *papyraceus*, becauſe the natives have written with bodkins either on the leaves or the bark. Such is the American palm, called *tal* by the Indians; and of the ſame kind is the guajaraba of New Spain. Every palm, the bark of which is ſmooth, and the leaves large and thick, may be uſed for this purpoſe.

The art of making paper from vegetables reduced to ſtuff was known in China long before it was practiſed in Europe; and the Chineſe have carried it to a degree of perfection hitherto unknown to the European artiſts. The fine paper in China is ſofter and ſmoother than that of Europe; and theſe qualities are admirably adapted to the pencil which the Chineſe uſe in writing.

Every province has its peculiar paper. That of Se-tchuen is made of linen rags as in Europe; that of Fo-kien, of young bamboo; that of the northern provinces, of the interior bark of the mulberry; that of the province of Kiang-nan, of the ſkin which is found in the webs of the ſilk-worm; finally, in the province of Hu-quang, the tree chu or ko-chu, furniſhes the materials with which they make paper.

The method of fabricating paper with the bark of different trees, is nearly the ſame with that which is followed in the bamboo, of which alone we ſhall ſpeak. The whole ſubſtance of the bamboo is reduced to pulp by ſteeping, boiling, and the mortar, and then beat together with the glutinous juice of a plant named *Koteng* till it becomes a thick and viſcous liquor. The workmen plunge their forms into this liquor; take out what is ſufficient for a ſheet of paper; which immediately becomes firm and ſhining, and is detached from the form by turning down the ſheet on the heap of paper already made, without the interpoſition of pieces of woollen cloth, as in Europe.

The Chineſe paper muſt be dipped in a ſolution of alum before it can take either ink or colours.

In Japan they manufactured paper from the bark of trees of a prodigious ſtrength. There is ſold at Serige, the capital of the province of Serige, a kind of it fit for bed-hangings and wearing apparel; reſembling ſo much ſtuffs of wool and ſilk, that it is often taken for them. The following is Kempfer's catalogue of trees uſed in Japan for the manufactory of paper. 1. The true paper-tree, called in the Japaneſe language, *kaadſi*, Kempfer characterizes them thus; *Papyrus fructu mori celſæ, ſive morus ſativa foliis urticæ mortuæ corticæ papifera.* 2. The falſe paper tree, called by the Japaneſe *katſi kadſire*; by Kempfer, *papyrus procumbens lactescens, folio longo, lanceata cortice chartaceo.* 3. The plant which the Japaneſe call *orens* is named by Kempfer *alva radice viſcoſa, flore ephemero magno punico.* 4. The fourth tree uſed for paper is the *futo-kadſura*, named by Kempfer *frutex viſcoſus procumbens folio telphii vulgaris æmulo fructu racemoſo.* The deſcription of theſe trees given by Kempfer, may be of great ſervice to lead botaniſts to diſcover the European plants and ſhrubs adapted, like the Japaneſe, for the fabrication of paper.

The Asbestos is a fibrous ſubſtance of little ſtrength, the threads of which are eaſily broken. This ſubſtance has the peculiar quality of ſupporting the action of fire without receiving any damage. A certain quantity of the aſbeſtos is pounded in a mortar of ſtone till it be reduced to a ſubſtance like cotton. All the parts of earth or ſtone remaining in the aſbeſtos are then taken off by means of a fine ſieve, and it is formed into ſheets of paper by an ordinary paper-mill. Mixing it with water reduces it to ſtuff; only, as it is heavier than that from linen rags, it requires to be continually ſtirred when they are taking it up with the frames. The only excellence of this paper is, that

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PAPER MILL.

Plate CCLXVII

Fig.1.

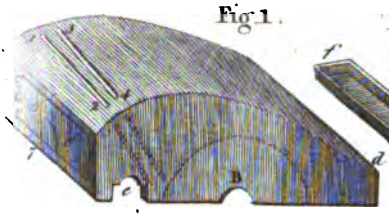
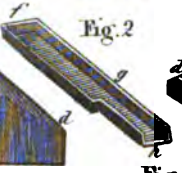


Fig.2



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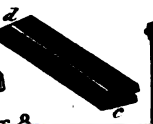


Fig.6.

Fig.7.

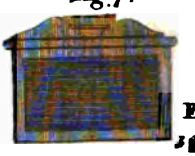
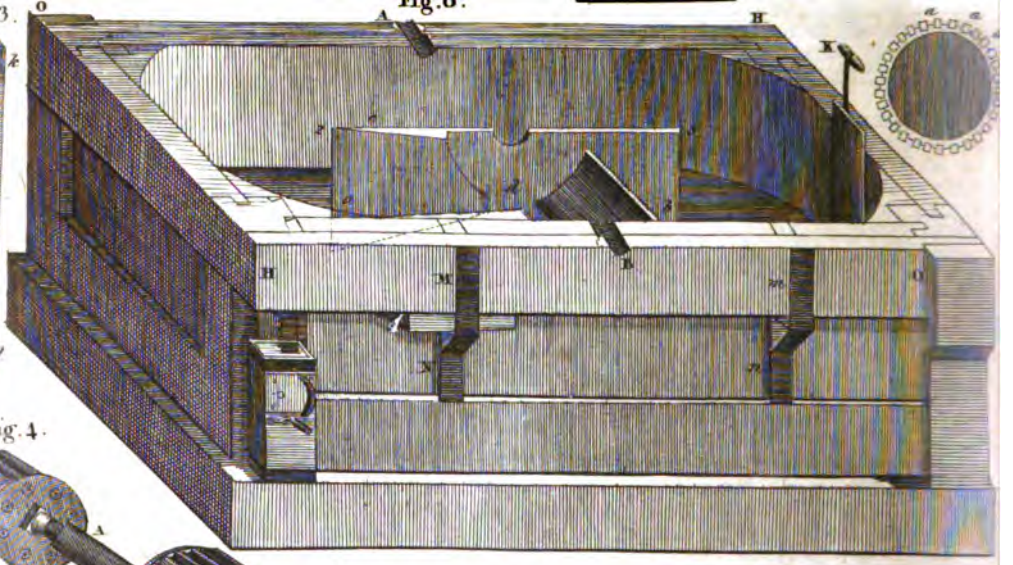


Fig.10

Fig.3.

Fig.8.



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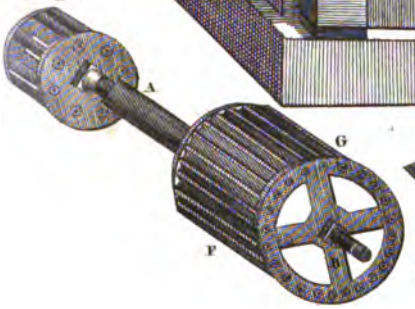
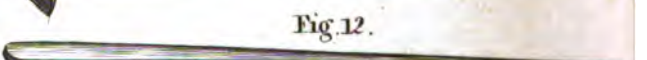
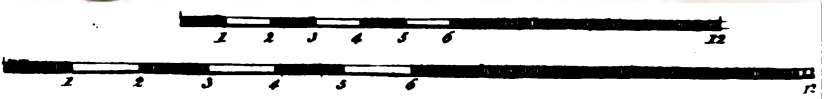


Fig.11.

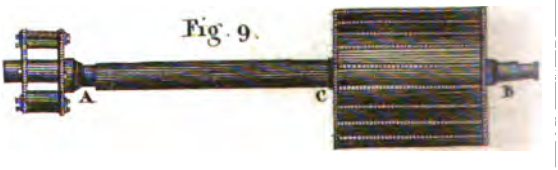
Fig.12.





Papaver Rhoeas

Fig. 9.



Pentadactylos *Picis*

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T. Clark Sculp.t

that the writing diſappears when it is caſt into the fire. It muſt be obſerved, at the ſame time, that as it is of a ſlender conſiſtency, and eaſily torn, it is more an object of curioſity than uſe.

PAPER MADE FROM LINEN RAGS is manufactured through all Europe. This kind of paper was utterly unknown to the ancients. By what nation and at what period the art of making our modern paper was diſcovered, we are ignorant. The merit has been aſcribed to different nations without any authority. All we know is that no book has been found written on this paper antecedent to A. D. 1270. It is diſcovered to have been in Germany in 1312, and in England in 1320 and 1342.

SECT. I. *Of the Art of* PAPER-MAKING *in* EUROPE.

To give a conciſe view of this ſubject, it is neceſſary to proceed with all the important parts of the operation in their order.

The ſelection of the rags and arranging them into different lots, according to their quality, and to the demand of the paper-mill, is the firſt buſineſs. They are then placed on an iron grate, which covers a large cheſt, where they are beat, and otherwiſe turned, till the filth and duſt paſs through the bars of the grate and fall into the cheſt.

The number of lots in the ſelection of rags muſt be proportioned to the maſs from which the ſelection is made, and to the kinds of paper produced by the mill. Some mills, the work of which is conſiderable, make 9 lots of their rags, five of which reſpect the fineneſs, and the reſt of the cleanneſs and the colour. In ordinary mills there are 4 lots, and in ſome only two.

It was formerly thought neceſſary to bring the rags to a ſtate of *putrefaction*; and this method univerſally prevailed till within theſe few years; but it is now entirely given up. That it was inferior to the method now in practice, is very evident; the rotting of the rags was peculiarly abſurd, as the paper made of fermented ſtuff could neither be ſo ſtrong nor ſo durable, as that which is made in the common way without putrefaction.

The duſter is made in the form of a cylinder, 4½ feet in diameter, and 5 feet in length. It is altogether covered with a wire net, and put in motion by its connection with ſome part of the machinery. A convenient quantity of rags before the ſelection is incloſed in the duſter, and the rapidity of its motion ſeparates the duſt from them, and forces it through the wire. It is of conſiderable advantage to uſe the duſter before ſelection, as it makes that operation leſs pernicious to the ſelectors.

The tables for cutting off the knots and ſtitching, and for forming them into a proper ſhape, are erected in the ſame place with the cutting table. The ſurface both of theſe and of the cutting table is compoſed of a wire net, which in every part of the operation allows the remaining duſt and refuſe of every kind to eſcape.

The rags are again carried from the cutting table back to the duſter, and thence to the engine, where, in general, they are in the ſpace of ſix hours reduced to the ſtuff proper for making paper. The hard and ſoft of the ſame quality are placed in different lots; but they can be reduced to ſtuff at the ſame time, provided the ſoft be put ſomewhat later into the engine.

The ENGINE is that part of the MILL which performs the whole action of reducing the rags to paſte, or, as it may be termed, of trituration. The number of the engines depend on the extent of the paper-work, on the force of water, or on the conſtruction of the machinery.

It will afford a ſufficient idea of the work, to give in detail a deſcription of the different parts of the engine. See *Plate* CCLXVII. *Fig.* 1. repreſents the chapiter which covers the roller. It is 4 feet 3 inches in length, and 2 feet 8 inches in breadth. The ſuperior part is pierced with two openings running croſs-wiſe, 1, 2, 3, 4, into which enter the chaſſes or wicker frames, *fig* 6. and 7; the firſt, made of wire-cloth, enters into the opening 3 and 4; the 2d, made of hair-cloth, and ſtrengthened with ſeveral croſs-bars of wood, enters into the opening 1, 2, ſerves to retain the ſmall pieces of rags which eſcape through the firſt, and prevents them from falling into the dale or hole-ſcupper, *fig.* 2. This hole-ſcupper is placed acroſs the vat of the engine, parallel to the axle of the roller; the part 9 enters into the notch *e* of the chapiter; and the extremity *h* enters into the opening *k* of the tunnel *kl* (*fig.* 3.), by which means the water daſhed through the wicker-frames by every revolution of the roller, is precipitated into the canal *fh*, and loſes itſelf below the engine. The *figures* 4, 9, and 10. repreſent the roller in perſpective, in plane, and in profile. It is two feet in diameter, and 2 feet 3 inches in length. The trundle head A is 16 inches in diameter, about half as much in length, and furniſhed with ſpindles of iron, which are ſcrewed to the end of the trundle head, made alſo of iron. The teeth or blades of the roller are 27 in number, and fitted ſtrongly into the wood which compoſes its body, parallel to its axis. They are of that thickneſs as to leave as much empty ſpace as they occupy. The exterior face of each of the blades ſhould be made round, and divided into two parts, with a longitudinal motion, as in the profile *a a a*, *fig* 10.

The axis AB of the roller (*fig.* 4. and 9.) has two parts perfectly rounded in A and in B, which perform the office of pivots. Theſe pivots reſt in the ſockets A and B (*fig.* 8.) in the middle of the levers OAH and OBH. By means of theſe levers they raiſe at pleaſure, or lower the axis of the roller, and fit it exactly, and in a parallel manner to the plate. The plates (ſee *fig.* 5.) are made of ſteel cut into channels, in ſuch a manner as to correſpond with the blades of the roller. Their channels are not perpendicular, but oblique; and their are two rows of them, *bx*, *xd*, conſiſting of ſeven or eight blades each on one plate.—Thoſe in *bx*, for the purpoſe of changing the plate, lie in an oppoſite direction to thoſe in *xd*. The levers are kept in their poſition near the vat by bands of iron, MN and *mn*; between which they are made higher or lower by the cogged wheel H, which ſupports one of the extremities. Wedges N *n* are likewiſe employed to fix the levers at a convenient height above the plates. Finally, every engine is ſupplied with a ſmall ſlide door, which is occaſionally raiſed to carry the prepared ſtuff by means of

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of the ſcuppets of wood to the general repoſitories.

Fig. 5. is placed in the vat *fig.* 8.; the roller (*fig.* 4.) is placed above it in ſuch a manner that the pivots reſt in the ſockets of the levers; the ſcupper (*fig.* 2.) and the chapiter are diſpoſed in the manner above mentioned. The engine is charged with a proper quantity of rags, and freſh water is admitted by a ſpigot placed at one of the corners. In this ſituation, when the engine is put in motion, the roller turning upon its axis draws the water and the rags by the leaſt inclined plane, and making them paſs between its blades and the channels of the plate, daſhes them againſt the chapiter and the wicker frames; and, in ſhort, part of them falls back into the engine, and returns into the circulation. The cauſe of this circulation is evidently the continual void occaſioned by the movement of the roller on the one ſide, and the return of the water and the ſtuff on the other.

As all the rags are not thrown towards the part B*d* of the chapiter, from whence they might fall back into the engine, but a part of them to a greater diſtance; it is neceſſary to have the wicker frames formerly deſcribed, not only to prevent their loſs, but to allow the dirty water to eſcape. The ſpigot at the corner of the engine continually ſupplies this waſte of water. This operation would be ſufficient to whiten the rags, although the rollers were raiſed conſiderably from the plate; and therefore the force and action of the rollers reducing them to ſtuff muſt be much more effectual. It requires great ſkill to conduct the engine, whether it be with regard to the firſt quantity, to the proper time for adding the ſofter rags, to the augmenting or diminiſhing the water in proportion to the trituration; or, finally, to knowing exactly when the ſtuff is reduced to a proper conſiſteney.

When the ſtuff is brought to perfection, it is conveyed into a general repoſitory, which ſupplies the vat from which the ſheets of paper are formed. This vat is made of wood, and generally about 5 feet in diameter, and 2½ in depth. It is kept in temperature by means of a grate introduced by a hole, and ſurrounded on the inſide of the vat with a caſe of copper. For fuel to this grate, they uſe charcoal or wood; and, frequently to prevent ſmoke, the wall of the building comes in contact with one part of the vat, and the fire has no communication with the place where they make the paper.

Every vat is furniſhed on the upper part with planks, incloſed inwards, and even railed in with wood, to prevent any of the ſtuff from running over in the operation. Acroſs the vat is a plank which they call the *trapan*, pierced with holes at one of the extremities, and reſting on the planks which ſurround the vat.

The forms or moulds are compoſed of wire-cloth, and a moveable frame. It is with theſe that they fetch up the ſtuff from the vat, in order to form the ſheets of paper. The ſides of the form are made of oak, which is previouſly ſteeped in water, and otherwiſe prepared, to prevent warping. The wire-cloth is made larger than the ſheet of paper, and the excefs of it on all ſides is covered with a moveable frame. This frame is neceſſary to retain the ſtuff of which the paper is made on the cloth: and it muſt be exactly adapted to the form, otherwiſe the edges of the paper will be ragged and badly finiſhed. The wire-cloth of the form is varied in proportion to the fineneſs of the paper and the nature of the ſtuff.

The felts are pieces of woollen cloth ſpread over every ſheet of paper, and upon which the ſheets are laid to detach them from the form, to prevent them from adhering together, to imbibe part of the water with which the ſtuff is charged, and to tranſmit the whole of it when placed under the action of the preſs. The two ſides of the felt are differently raiſed: that of which the hair is longeſt is applied to the ſheets which are laid down; and any alteration of this diſpoſition would produce a change in the texture of the paper. The ſtuff of which the felts are made ſhould be ſufficiently ſtrong, in order that it may be ſtretched exactly on the ſheets without forming into folds; and, at the ſame time, ſufficiently pliant to yield in every direction, without injury to the wet paper. As the felts have to reſiſt the reiterated efforts of the preſs, it appears neceſſary that the warp be very ſtrong, of combed wool, and well twiſted. On the other hand, as they have to imbibe a certain quantity of water, and to return it, it is neceſſary that the woof be of carded wool, and drawn out into a ſlack thread. —Theſe are the utenſils, together with the preſs, which are uſed in the apartment where the ſheets of paper are formed.

The vat being furniſhed with a ſufficient quantity of ſtuff and of water, two inſtruments are employed to mix them; the one of which is a ſimple pole, and the other a pole armed with a piece of board, rounded and full of holes. This operation is repeated as often as the ſtuff falls to the bottom. In the principal writing mills in England, they uſe for this purpoſe what is called a *hog*, which is a machine within the vat, that by means of a ſmall wheel on the outſide, is made to turn conſtantly round, and keep the ſtuff in perpetual motion. When the ſtuff and water are properly mixed, it is eaſy to perceive whether the previous operations have been complete. When the ſtuff floats cloſe, and in regular flakes, it is a proof that it has been well triturated; and the parts of the rags which have eſcaped the rollers alſo appear.

After this operation the workman takes one of the forms, furniſhed with its frame, by the middle of the ſhort ſides, and fixing the frame round the wire-cloth with his thumbs, he plunges it obliquely 4 or 5 inches into the vat, beginning by the long ſide, which is neareſt to him. After the immerſion he raiſes it to a level: by theſe movements he fetches up on the form a ſufficient quantity of ſtuff; and as ſoon as the form is raiſed the water eſcapes through the wire-cloth, and the ſuperfluity of the ſtuff over the ſides of the frame. The fibrous parts of the ſtuff arrange themſelves regularly on the wire-cloth of the form, not only in proportion as the water eſcapes, but alſo as the workman favours this effect by gently ſhaking the form. Afterwards, having placed the form on a piece of board, the workman takes off the frame or deckle, and glides this form towards the coucher;

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er; who, having previouſly laid his felt, places it with his left hand in an inclined ſituation, on a plank fixed on the edge of the vat, and full of holes. During this operation, the workman applies his frame, and begins a ſecond ſheet. The coucher ſeizes this inſtant, takes with his left hand the form, now ſufficiently dry, and laying the ſheet of paper upon the felt, returns the form by gliding it along the trapan of the vat.

They proceed in this manner, laying alternately a ſheet and a felt, till they have made ſix quires of paper, which is called a *poſt*; and this they do with ſuch ſwiftneſs, that, in many ſorts of paper, two men make upwards of 20 poſts in a day. When the laſt ſheet of the poſt is covered with the laſt felt, the workmen about the vat unite together, and ſubmit the whole heap to the action of the preſs. They began at firſt to preſs it with a middling lever, and afterwards with a lever about 15 feet in length. After this operation, another perſon ſeparates the ſheets of paper from the felts, laying them in a heap; and ſeveral of theſe heaps collected together are again put under the preſs.

The exchange is the next operation. It is conducted in a hall contiguous to the engine, ſupplied with ſeveral preſſes, and with a long table. The workman arranges on this table, the paper newly fabricated, into heaps; each heap containing 8 or 10 of thoſe laſt under the preſs, kept ſeparate by a woollen felt. The preſs is large enough to receive two of them at once, placed the one at the other's ſide. When the compreſſion is judged ſufficient, the heaps of paper are carried back to the table, and the whole turned ſheet by ſheet, in ſuch a manner that the ſurface of every ſheet is expoſed to a new one; and in this ſituation they are again brought under the preſs. It is in conducting theſe two operations ſometimes to 4 or 5 times, or as often as the nature of the paper requires, that the perfection of the Dutch plan conſiſts. If the ſtuff be fine, or the paper ſlender, the exchange is leſs frequently repeated. In this operation, it is neceſſary to alter the ſituation of the heaps, with regard to one another, every time they are put under the preſs; and alſo, as the heaps are higheſt toward the middle, to place ſmall pieces of felt at the extremities, to bring every part of them under an equal preſſure. A ſingle man, with 4 or 5 preſſes, may exchange all the paper produced by two vats, provided the previous preſſing at the vats be well performed. The work of the exchange generally laſts about two days on a given quantity of paper.

The ſheds for drying the paper are in the neighbourhood of the paper-mill; and are furniſhed with a vaſt number of cords, on which they hang the ſheets both before and after the ſizing. The ſheds are ſurrounded with moveable lattices, to admit a quantity of air ſufficient for drying the paper. The cords of the ſhed are ſtretched as much as poſſible; and the paper, 4 or 5 ſheets of it together, is placed on them by a wooden inſtrument reſembling a pick-ax. The principal difficulty in drying the paper, conſiſts in gradually admitting the external air, and in preventing the cords from imbibing moiſture. With regard to the firſt of theſe, the Dutch uſe very low ſheds, and conſtruct their lattices with great exactneſs. By theſe means the Dutch paper is dried equally, and is extremely ſupple for the ſizing. They prevent the cords from imbibing the water by covering them with wax. In uſing ſuch cords, the moiſture does not continue in the line of contact between the paper and the cord, which prevents the ſheets from ſtretching in that particular place by its weight, and from the folds which the moiſture in the ſubſequent operations might occaſion. The Dutch alſo employ cords of conſiderable thickneſs, and place fewer of them under the ſheets; by which means they diminiſh the points of contact, and give a freer and more equal circulation to the air.

The ſize for paper is made of the ſhreds and pairings got from the tanners, curriers, and parchment-makers. All the putrefied parts, and the lime, are carefully ſeparated from them, and they are incloſed into a kind of baſket, and let down by a rope and pully into the cauldron. This is a late invention, and ſerves two valuable purpoſes. It makes it eaſy to draw out the pieces of leather when the ſize is extracted from them by boiling, or eaſy to return them into the boiler if the operation be not complete. When the ſubſtance is ſufficiently extracted, it is allowed to ſettle for ſome time; and it is twice filtered before it is put into the veſſel into which they dip the paper.

Immediately before the operation, a certain quantity of alum is added to the ſize. The workman takes a handful of the ſheets, ſmoothed and rendered as ſupple as poſſible, in his left hand, dips them into the veſſel, and holds them ſeparate with his right, that they may equally imbibe the ſize. After holding them above the veſſel for a ſhort ſpace of time, he ſeizes on the other ſide with his right hand, and again dips them into the veſſel. When he has finiſhed 10 or 12 of theſe handfuls, they are ſubmitted to the action of the preſs. The ſuperfluous ſize is carried back to the veſſel by a ſmall pipe. The veſſel in which the paper is ſized is made of copper, and furniſhed with a grate, to give the ſize, when neceſſary, a due temperature; and a piece of thin board or felt is placed between every handful as they are laid on the table of the preſs.

As ſoon as the paper is ſized, it is the practice of ſome paper-makers to carry it immediately to the drying houſe, and hang it, before it cools, ſheet by ſheet, on the cords. The paper, unleſs particular attention be paid to the lattices of the drying houſe, is apt to dry too faſt; whereby a great part of the ſize goes off in evaporation; or if too ſlow it falls to the ground. The Dutch drying houſes are the beſt to prevent theſe inconveniences. But the exchange after the ſizing, which is generally practiſed in Holland, is the beſt remedy. They begin this operation on the handfuls of paper, either while they are ſtill hot, or otherwiſe, as they find it convenient. But after the exchange, they are careful to allow the heaps to be altogether cold before they are ſubmitted to the preſs. Without this precaution, the ſize would either be wholly ſqueezed out by the preſs of the exchange, or the ſurface of the paper become very irregular. It is of conſequence that the paper, ſtill warm from the ſizing, grow gradually firm, under

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under the operation of the exchange, in proportion as it cools. By this method it receives that varnish which is afterwards brought to perfection under the press, and in which the excellency of the paper, either for writing or drawing, chiefly consists. It is in consequence of the exchanging and pressing that the Dutch paper is soft and equal, and that the size penetrates into the body of it, and is extended equally over its surface.

The exchange after the sizing ought to be conducted with the greatest skill and attention, because the grain of the paper then receives impressions which can never be eradicated. When the sized paper is also exchanged, it is possible to hang more sheets together on the cords of the drying house. The paper dries better in this condition, and the size is preserved without any sensible waste, because the sheets of paper mutually prevent the rapid operation of the external air. And as the size has already penetrated into the paper, and is fixed on the surface, the insensible progress of a well conducted drying house renders all the good effects more perfect, in proportion as it is slowly dried. If, to these considerations, be added the damage done to the paper in drying it immediately after the press of the sizing room, whether it be done in raising the hairs by separating the sheets, or in cracking the surface, it is evident that the trouble of the second exchange is infinitely overpaid by the advantage.

When the paper is sufficiently dry, it is carried to the finishing room, where it is pressed, selected, examined, folded, made up into quires, and finally, into reams.—It is here put twice under the press; first, when it is at its full size, and secondly, after it is folded. The principal labour of this place, consists in assorting the paper into different lots, according to its quality and faults; after which, it is made up into quires. The person who does this must possess great skill, and be capable of great attention, because he acts as a check on those who separated the paper into different lots. He takes the sheets with his right hand, folds them, examines them, lays them over his left arm till he has the number requisite for a quire, brings the sides parallel to one another, and places them in heaps under the table. An expert workman, if proper care has been taken in assorting the lots, will finish in this manner, near 600 quires in a day.

The paper is afterwards collected into reams of 20 quires each, and for the last time put under the the press, where it is continued for 10 or 12 hours, or as long as the demand of the paper-mill will permit.

A method has lately been discovered of bleaching the rags or stuff, which will undoubtedly be adopted everywhere in the preparation of writing paper. This discovery was made by Messrs Scheele, Berthollet, and Chaptal. See Acid, Oxygenated Muriatic, and Bleaching, *Part* II.

Among many other properties of the new acid discovered by Mr Scheele, the most remarkable was, that it destroyed the colour of every vegetable substance which was exposed to its action; or, in other words, it *bleached* them; or, in the language of the dyers, it *discharged their colours*; that is to say, whatever was the colour of any vegetable body that was submitted to the action of the oxygenated muriatic acid, it always became white, or lost its colouring matter.

In 1786, Dr Beddoes, now professor of chemistry in the university of Oxford, published an English translation of the Chemical Essays of Mr Scheele; and thereby made known to the chemists of Great Britain the power of the oxygenated muriatic acid, to bleach or whiten vegetable substances, or to discharge or decompose their colours. But M. Berthollet was the first who thought of rendering the discovery subservient to the purposes of manufacture; and he published an Essay on this subject, in the *Annales de Chemie*, in 1789.

In the same work and year, M. Chaptal published an account of some experiments, in which, among many other applications of the oxygenated muriatic acid to purposes useful in the œconomical arts, he gives information of having bleached or whitened coarse rags used by the paper makers, so as greatly to improve the quality of the paper into which they were afterwards manufactured. His preparation of this bleaching liquor differs not from Berthollet's, which is as follows: "Take 6 oz. of manganese and 16 oz. of sea-salt, both reduced to a fine powder; mix these accurately, and introduce them into a retort or distilling vessel: Then take 12 oz. of oil of vitriol and 8 oz. of water, mixed together, and allowed to cool; add these to the other ingredients in the retort, and connect the retort with a cask or receiver, capable of holding 27½ gallons of water, but only containing 25 gallons, which is to be impregnated with the gas or vapour of the oxygenated muriatic acid; and proceed to distillation, first without, and afterwards with a fire, gradually raised till the whole acid comes over."

Experiments have been made with this liquor both by some of the principal paper-makers in the neighbourhood of Edinburgh, and by Messr. Clement and George Taylors of Maidstone in Kent. By the former it was found, that paper made of rags and pulp whitened in this manner, was superior to any other made of similar materials, not only in colour but in fineness of texture. By the latter, its excellence was found to be so great, that probably, having never heard of Scheele, Berthollet, and Chaptal, and conceiving themselves to be the first inventors of it, they obtained a patent for its exclusive use, which other manufacturers will doubtless disregard. The name of this acid is now shortened to *oxy-muriatic*. See Oxygen, Oxy-muriat, N° 3; and Oxy-muriatic Acid, § 1—3.

Formerly writing paper could be made only of *unprinted* linen, but now, in consequence of the above discoveries, even printed linen can be made into the finest and whitest paper. In 1795, Mr Elias Carpenter of Bermondsey obtained a patent for a method of bleaching paper of such materials in the *water-leaf*, or *sheet*, and fixing it without dyeing.

In the preparation of the pulp, the coarser rags are to be macerated for 2 or 3 days in a caustic alkaline ley, and wrought into sheets of paper in the usual way. A strong wooden box is then to be

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be made of a size proportioned to the paper, lined on the inside with white paint, and furnished with several stages of cross bars of glass. The bottom of the box is to be covered with a stratum about one inch deep of caustic ley, and the paper laid by quarter reams or less, across the glass bar. A hole must be made in the box to admit the beak of an earthen ware retort, into which must be put manganese and sea-salt in powder, sulphuric acid, and an equal quantity of water impregnated with the steams of burning sulphur. (Sulphureous acid.) The cover of the box is to be made air-tight, by luting or slips of paper dipped in paste. The apparatus being thus prepared, the belly of the retort is to be plunged in water, kept boiling, and in a short time the oxy-muriatic gas will be driven into the box, will penetrate the paper, and render it of a dazzling whiteness; while the alkaline ley at the bottom will, by gradually absorbing it, prevent its becoming so concentrated as to destroy or injure the texture of the paper. From 3 to 4 lb. of sulphuric acid will suffice for 1 cwt. of paper, and the operation will be completed in 8 hours. The sheets, as they are taken out of the box, are to be sized with the following mixture:—To 1 cwt. of clippings of skin, add 14 lb. of alum, 7 lb. of calcined vitriol, and 1 lb. of gum arabic, with a sufficient quantity of water to size 50 reams of foolscap. The same method will serve equally well to clean engravings or printing; for though the oxy-muriatic acid discharges all stains, dirt, &c. yet it is incapable of acting on printer's ink.

SECT. II. *Of the* DIFFERENT KINDS *of* PAPER.

1. The paper proper for WRITING should be without knots, without any parts of the stuff not triturated, without folds and without wrinkles, of a supple texture, its grain uniform and regular, softened in the exchange, and not destroyed by smoothing. The ground of it must be extremely white, or shaded with a very light blue. It should be fully and equally sized.

2. To make paper peculiarly fit for DURABLE WRITING, Dr Lewis recommends the impregnation of it with astringent materials. "It is observable (says he) that writings first begin to fade or change their colour on the back of the paper, where the larger strokes have sunk in, or are visible through it; as if part of the irony matter of the vitriol was in a more subtile or dissolved state than the rest, and sunk further, on account of its not being fully disengaged from the acid, or sufficiently combined with the astringent matter of the galls. But if the paper was impregnated with astringent matter, the colour of the ink would be more durable."

3. The paper used for DRAWING, or for COLOURED MAPS, is in some mills made from one kind of white stuff, either fine or middling; in others from a mixture of 3 or 4 kinds of stuff of different colours. The same qualities are necessary as in that for writing. The grain, however, must be a little more raised, although softened by the exchange; for, without this grain, the pencil would leave with difficulty the traces of the objects. Great care is also necessary in the sizing of it.

4. FURNITURE PAPER should be well softened and submitted to the exchange, to take more exactly the outlines of the figures. The French have carried this part of the manufacture to the highest state of perfection.

5. The British and Dutch have had the greatest success in manufacturing PASTEBOARD, which they make either from a single mass of stuff on the form, or from a collection of several sheets pasted together. In both cases, the sheets of pasteboard are made of stuff not rotted, and triturated with rollers, furnished with blades of well tempered steel. By the operation of the exchange, and smoothing continued for a long time, they obtain solid and smooth stuffs, which neither break under the folds of cloth, nor adhere to them.

6. In England they have at least equalled any other nation in the manufacture of PRINTING PAPER; and in Scotland they have arrived at such a degree of perfection in this art, that great part of what they manufacture is sent into England. It requires to be made of a soft and equal stuff, without folds or wrinkles, of a natural whiteness, and with a shade of blue. It must be sized less strongly than writing paper, but sufficiently to give neatness to the characters. Some artists, to meliorate the grain, and reduce the inequalities of the surface, submit this paper to the exchange. And a moderate degree of exchanging and of pressing may be of great service, after the sheets are printed, to level the hollow places occasioned by the press, and the relievo of the letters.

7. ENGRAVING requires a paper of the same qualities with the last, with respect to the stuff, which must be pure, without knots, and equally reduced; the grain uniform, and the sheets without folds or wrinkles. To preserve the grain, it should be dried slowly in the lowest place of the drying-house. The effects of the exchange must be moderated with the greatest care, and the action of the two first presses must be equally distributed over the whole mass, otherwise the inequality of the moisture at the middle and sides will expose it to wrinkles in the drying. The sizing of this paper must also be moderate. The WIRE-WOVE FRAME, though but lately invented, is peculiarly adapted to this kind of paper.

8. Paper for CARDS must be manufactured from a pretty firm stuff, to take that degree of smoothness which makes the cards glide easily over one another in using. For this reason the cardmakers reject every kind of paper which is soft and without strength. This paper requires to be very much sized, since the sizing holds the place of varnish, to which the smoothing gives a glazed and shining surface. The French excel every other nation in this branch of the manufacture of paper.

SECT. III. *Of* VARIOUS OPERATIONS *on* PAPER, *to render it fit for* DIFFERENT PURPOSES.

1. To prevent paper from SINKING, take about the size of a nut of rock alum, dissolve it in a glass of clear water, and apply it to the paper which has not been sufficiently sized, with a fine sponge. In this manner the paper-manufacturers of Paris prepare the paper for drawing, called *papiers lavés*. When there is occasion to write on a printed book, or on paper too fresh, it is sufficient to mix a little gum with ordinary ink.

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2. To give to writing paper a BRILLIANT VARNISH, take that which is of an ordinary fineneſs, very ſmooth, without any kind of ſtain or hairs on its ſurface; ſtretch it on a ſmooth plank, and by means of a hare's foot cover it with a thin and equal layer of ſandarac finely powdered. Afterwards, if a whole ream is to be varniſhed, take 8 oz. of rock alum, and 1 oz. of white ſugar candy; bring them to boil in ſix pints of water; and when the liquor is lukewarm, wet that ſide of the ſheet which has been covered with the ſandarac with a fine ſponge; lay the ſheets in a heap, one ſheet exactly above another; and ſubmit the ream to the preſs for 12 hours: hang them ſheet by ſheet on the cords of the drying-houſe; put them again under the preſs for ſome days to ſtretch them; and, finally, beat them with a book-binder's mallet. This paper can only be uſed for three or four months after it is prepared.

3. PAINTERS prepare their paper for DRAWING, and giving it a dark ground, which ſpares them much labour of the pencil afterwards in thoſe places where ſhade is neceſſary. For this purpoſe they take white paper and paſs a ſponge over it, which has imbibed water impregnated with ſoot, leaving the light places to be formed afterwards. They uſe alſo a kind of paper for drawing, which is called tainted paper. A light colour is paſſed over the whole ground, which deprives the paper of its original brightneſs, and makes the light places of the print appear more in relievo, and more luminous.

4. The method moſt common and moſt convenient for COPYING A PRINT, is to uſe oiled paper. The manner of preparing this paper is to take that which is thin and ſmooth, known commonly by the name of *ſerpent paper*, and moiſten it with a compoſition, two parts of the oil of walnuts and one part of the oil of turpentine mixed well together. A ſheet of paſteboard and a ſheet of paper are laid on a ſmooth table; above them are placed two ſheets of paper to be prepared; and a layer of the oil applied to the uppermoſt is ſufficient to penetrate both. This may be done to any number of ſheets, and a ſtrong ſheet of paſteboard is placed over the whole. The heap is afterwards ſubmitted to the preſs, under which it remains for two or three days till the oil be completely dry. Paper prepared in this manner ſerves to copy very readily and exactly all kinds of figures and plans; becauſe, being altogether tranſparent, all the parts of the drawing, whether of light or ſhade are eaſily diſtinguiſhed.

5. Beſides the paper made from the ASBESTOS, it is neceſſary for wrapping up gunpowder and valuable writings, to have a paper that will not eaſily take fire. The manner in which this is prepared is extremely ſimple. Ordinary paper is dipped into boiling liquid, conſiſting of $\frac{3}{4}$ of water and $\frac{1}{4}$ of diſſolved alum. This ſalt, which is not inflammable, covers the ſurface of the paper, and renders it in ſome meaſure incombuſtible.

6. In the ſeaſon of verjuice, a little of it diluted with water is ſufficient for obliterating any freſh SPOT OF INK. The ſalt of the verjuice diſſolved in water anſwers the purpoſe equally well, and the ſalt of the ſorrel is alſo employed, though with leſs effect. If the ſpots be dry, and the above acids are inſufficient to eradicate them, a little aquafortis diluted in water and applied with the feather of a quill or a fine hair pencil will make them entirely diſappear.

7. Books and MSS. are ſometimes defaced by accidental STAINS with OIL. To remove ſuch blemiſhes, burn ſheeps bones and reduce them to a fine powder; lay a quantity of this powder on each ſide of the ſtain; place it between two ſheets of white paper, and ſubmit it for 12 hours to the preſs. If the ſtains have not diſappeared, it will be neceſſary to reiterate the proceſs.

8. To make OILED PAPERS take COLOURS; mix with the colours a very ſmall quantity either of the gall of a pike or carp; and as theſe ſubſtances are of the nature of ſoap, they diſſolve the greaſe that is in the paper, and permit the colours to be ſpread over the ſurface.

9. EMERY PAPER, which is employed for taking the ruſt from iron without waſhing it, is made by impregnating coarſe paper with gummed water or any other tenacious ſubſtance, and then covering it over with the fineſt emery.

10. The COLOURS proper for paper are not different from thoſe uſed for other ſubſtances, and are enumerated under the article COLOUR-MAKING. They are applied with ſoft bruſhes, after being tempered to a due degree with ſize or gum water. If the paper on which they are to be laid is ſoft, ſo that the colours are apt to go through, it muſt alſo be ſized before they are laid on, or a proportionably larger quantity muſt be uſed along with the colours themſelves. If a conſiderable extent of the paper is to be done over with one colour, it muſt receive ſeveral coatings, as thin as poſſible, letting each coat dry before another is put on, otherwiſe the colour will be unequal.

11. To GILD PAPER, take yellow ochre, grind it with rain-water, and lay a ground with it upon the paper all over; when dry, take the white of eggs, beat it clear with white ſugar-candy, and ſtrike it all over: then lay on the leaf-gold; and when dry, poliſh it with a tooth. Some take ſaffron, boil it in water, and diſſolve a little gum with it; then they ſtrike it over the paper, lay on the gold; and, when dry, they poliſh it.

12. To SILVER PAPER, in the Chineſe method, take two ſcruples of clear glue made of neats leather, one ſcruple of white alum, and half a pint of clear water; ſimmer the whole over a ſlow fire, till the water is conſumed, or the ſteam ceaſes: then, your ſheets of paper being laid on a ſmooth table, dip a pretty large pencil into that glue, and daub it over as even as you can, repeating this two or three times: then ſift the powder of talc through a fine ſieve, made of horſe-hair or gauze, over it; and then hang it up to dry; and, when dry, rub off the ſuperfluous talc, which ſerves again for the ſame purpoſe. The talc is prepared in the following manner: Take fine white tranſparent Muſcovy talc; boil it in clear water for four hours; then take it off the fire, and let it ſtand ſo for two days: then take it out, waſh it well, and put it into a linen rag, and beat it to pieces with a mallet: to 10 lb. of talc add 3 lb. of white alum, and grind them together

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in a little hand-mill; ſift it through a gauze-ſieve; and being thus reduced to a powder, put it into water, and juſt boil it up: then let it ſink to the bottom, pour off the water from it, place the powder in the ſun to dry, and it will become a hard conſiſtence. This beat in a mortar to an impalpable powder, and keep it for uſe free from duſt.

13. The common GROUNDS laid in water for PAPER HANGINGS are made by mixing whiting with the common glovers ſize, and laying it on the paper with a proper bruſh in the moſt even manner. This is all that is required where the ground is to be left white; and the paper being then hung on a proper frame till it be dry, is fit to be painted. When coloured grounds are required, the ſame method muſt be purſued, and the ground of whiting firſt laid; except in pale colours, ſuch as ſtraw-colours or pink, where a ſecond coating may ſometimes be ſpared, by mixing ſome ſtrong colour with the whiting.

14. There are three methods by which PAPER-HANGINGS are PAINTED; the firſt by *printing* on the colours; the 2d by uſing the *ſtencil*; and the 3d by laying them on with a *pencil*, as in other kinds of painting.

I. When the colours are laid on by PRINTING, the impreſſion is made by wooden prints; which are cut in ſuch manner, that the figure to be expreſſed is made to project from the ſurface by cutting away all the other part; and, this being charged with the colours tempered with their proper vehicle, by letting it gently down on a block on which the colour is previouſly ſpread, conveys it thence to the ground of the paper, on which it is made to fall more forcibly by means of its weight, and the effort of the arm of the perſon who uſes the print. There muſt be as many ſeparate prints as there are colours to be printed. But where there are more than one, great care muſt be taken, after the firſt, to let the print fall exactly in the ſame part of the paper as that which went before; otherwiſe the figure of the deſign would be brought into irregularity and confuſion. In common paper of low price, it is uſual, therefore, to print only the outlines, and lay on the reſt of the colours by ſtencilling; which both ſaves the expenſe of cutting more prints, and can be practiſed by common workmen, not requiring the great care and dexterity neceſſary to the uſing ſeveral prints.

II. The manner of STENCILLING the colours is this. The figure, which all the parts of any particular colour make in the deſign to be painted, is to be cut out in a piece of thin leather or oil-cloth, which pieces of leather or oil cloth are called *ſtencils*; and being laid flat on the ſheets of paper to be printed, ſpread on a table or floor, are to be rubbed over with the colour, properly tempered, by means of a large bruſh. The colour paſſing over the whole is conſequently ſpread on thoſe parts of the paper where the cloth or leather is cut away, and give the ſame effect as if laid on by a print. This is nevertheleſs only practicable in parts where there are only detached maſſes or ſpots of colours: for where there are ſmall continued lines, or parts that run one into another, it is difficult to preſerve the connection or continuity of the parts of the cloth, or to keep the ſmaller corners cloſe down to the paper; and therefore, in ſuch caſes, prints are preferable. Stencilling is indeed a cheaper method of performing coarſe work than printing: but without ſuch extraordinary attention and trouble as render it equally difficult with printing, it is far leſs beautiful and exact in the effect. For the outlines of the ſpots of colour want that ſharpneſs and regularity that are given by prints.

III. PENCILLING is only uſed in the caſe of nicer work, ſuch as the better imitations of the India paper. It is performed in the ſame manner as other paintings in water or varniſh. It is ſometimes uſed only to fill the outlines already formed by printing, where the price of the colour, or the exactneſs of the manner in which it is required to be laid on, render the ſtencilling or printing it leſs proper; at other times, it is uſed for forming or delineating ſome parts of the deſign, where a ſpirit of freedom and variety, not to be had in printed outlines, are deſired to be had in the work.

15. Management of FLOCK PAPER. The paper deſigned for receiving the flock is firſt prepared with a varniſh ground with ſome proper colour, or by that of the paper itſelf. It is frequently practiſed to print ſome Moſaic or other ſmall running figure in colours on the ground, before the flock be laid on; and it may be done with any pigment of the colour deſired, tempered with varniſh, and laid on by a print cut correſpondently to that end.

The method of laying on the flock is this: A wooden print being cut, for laying on the colour in ſuch manner that the part of the deſign which is intended for the flock may project beyond the reſt of the ſurface, the varniſh is put on a block covered with leather or oil cloth, and the print is to be uſed alſo in the ſame manner, to lay the varniſh on all the parts where the flock is to be fixed. The ſheet, thus prepared by the varniſhed impreſſion, is then to be removed to another block or table, and to be ſtrewed over with flock; which is afterwards to be gently compreſſed by a board, or ſome other flat body, to make the varniſh take the better hold of it: and then the ſheet is to be hung on the frame till the varniſh be perfectly dry; when the ſuperfluous part of flock is to be bruſhed off by a ſoft camel's-hair bruſh; and the proper flock will be found to adhere in a very ſtrong manner. The method of preparing the flock is, by cutting woollen rags or pieces of cloth with the hand, by means of a large bill or chopping knife; or by means of a machine worked by a horſe mill.

There is a kind of counterfeit of flock-paper, which, when well managed, has very much the ſame effect to the eye as the real, though done with leſs expenſe. The manner of making this ſort is, by laying a ground of varniſh on the paper; and having afterwards printed the deſign of the flock in varniſh, in the ſame manner as for the true; inſtead of the flock, ſome pigment, or dry colour of the ſame hue with the flock required by the deſign, but ſomewhat of a darker ſhade, be-

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ing well powdered, is ſtrewed on the printed varniſh, and produces nearly the ſame appearance.

Sect. IV. *Of* Rendering Paper incombuſtible.

The Bleaching of ſtained paper is not the only improvement which the art of paper-making has derived from the late diſcoveries in modern chemiſtry. In Crell's *Chemical Analyſes* for 1797, there is an account of ſome curious experiments made by M. L. Brugnatelli, with the view of rendering paper incombuſtible, and, of courſe, the writing on it indeſtructible by fire.

Of all the ſubſtances which he tried, he found the liquor of flints, (See Chemistry, *Index*,) the moſt proper to ſecure paper from deſtruction by fire. He dipped a ſheet of paper in it freſh made, or daubed it ſeveral times over the whole paper with a hair brush, and dried it in the ſun, or in an oven. Paper thus prepared loſt ſome of its ſoftneſs, became rougher than before, and acquired a lixivious cauſtic taſte. In other reſpects it did not differ from common white paper.

When this paper was laid upon glowing coals, it did not burn like common paper, but became red and was converted to a coal; which however did not fall to aſhes like the coal of common paper; ſo that it muſt therefore be conſidered as petrified paper. This coal, however, is extremely friable, for when taken between the fingers, or preſſed together, it crumbles to pieces. Still, however, the diſcovery is valuable, as along with it M. Brugnatelli diſcovered a kind of ink, of ſuch a nature that the characters written with it continue viſible on this coal.

This ink he made, by combining diſſolved nitrite of zinc with common ink; and found that the colour of this mixture, though it appeared pale on common paper, became ſo dark on prepared paper, that words written with it appeared more conſpicuous than words written with common ink. When the paper was burnt or reduced to a coal, the characters were ſo viſible, in a clear *white* colour on a *dark* ground, that they could be read with as much eaſe, as characters written with the beſt ink on white paper. If M. Brugnatelli ſucceed in his attempts to diſcover a method of rendering his prepared paper leſs friable when burnt, his diſcovery will be of the utmoſt importance.

PAP

(1.) * PAPERMILL. *n. ſ.* [*paper* and *mill*.] A mill in which rags are ground for paper.—Contrary to the king and his dignity, thou haſt built a *paper-mill*. *Shak.*

(2.) Paper-mill. See Paper-making, *Sect.* I.

Paper Money, is a term frequently made uſe of for bank-bills, which paſs currently in trade inſtead of gold and ſilver. On this ſpecies of currency, the national utility of which has been controverted by ſome, Dr Smith has a number of judicious obſervations in his *Treatiſe on the Wealth of Nations*, for which we muſt refer our readers to that important work, as our room permits us not to quote them. See Bank, § 10—21, and Trade.

PAPERO. See Papyrus.

Paper Office, an office in the palace of Whitehall, in which all the public writings, matters of ſtate and council, proclamations, letters, intelligences, negociations abroad, and generally all diſpatches that paſs through the offices of the ſecretaries of ſtate, are lodged, by way of library.

* PAPESCENT. *adj.* Containing pap; inclinable to pap.—The cooling, lacteſcent, *papeſcent* plants; as cichory and lettuce. *Arbuthnot.*

(1.) PAPHIA, an ancient name of Cyprus.

(2.) Paphia, a ſurname of Venus, from Paphos.

PAPHII, the people of Paphos. *Stephan.*

PAPHLAGONIS, or the } the inhabitants of
PAPHLAGONIANS, } Paphlagonia, who are mentioned by Homer, as a brave people, but by Lucian as ſuperſtitious and ſilly. Bocchart derives their name and deſcent from *Phaleg* or *Peleg*, the ſon of Heber.

PAPHLAGONIA, in ancient geography, a country of the Hither Aſia, beginning at Parthenius, a river of Bithynia, on the W. and extending in length to the Halys E. with the Euxine on the N. Galatia on the S. Pliny enlarges the limits on the W. ſide to the river Billis, on this ſide the Parthenius. It is called Pylæmenia by Pliny. It is now called Penderachia.

PAP

(1, 2.) PAPHOS, in ancient geography, two adjoining iſlands on the W. ſide of the iſland of Cyprus; the one called *Hale Paphos*, (*Strabo, Ptolemy, Pliny;*) the other *Nea Paphos*. When mentioned without an adjunct, this latter is always underſtood. Both dedicated to Venus, hence ſurnamed Paphia, and left undiſtinguiſhed by the poets. (*Virgil, Horace.*) Paphos was reſtored by Auguſtus, after a ſhock of an earthquake, and called *Auguſta*, (*Dio.*) It is ſituated on the S. ſide: it contained the celebrated temple of Venus; which, together with the city, was deſtroyed by an earthquake, ſo that the leaſt veſtige of it is not now to be ſeen. A lake in the neighbourhood, which in ſummer overflows with ſtagnant and corrupted water, renders the air unwholeſome.

(3.) Paphos, New, the capital of the above iſlands, on the W. coaſt, called by modern geographers *Baffos*. This city had a port, where veſſels trading upon that coaſt ſtill caſt anchor; but only in ſummer; for, being expoſed to every wind, it is extremely dangerous. The bottom of it is full of ſharp rocks. There are two caſtles; one on the coaſt; the other on a hill; but in ruins. The government of Paphos conſiſts of a digdaban or commiſſary; a cadi; and an aga, who preſides over the cuſtomhouſe. In the church of St George, ſervice is performed by the Greek miniſters. The productions of this part of the iſland, are ſilk, barley, and other grain. In this iſland St Paul converted Sergius, a Roman proconſul, and conferred the deaconſhip on Titus. Paphos was an epiſcopal city in the time of the Luſignians: and it is ſtill

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ſtill a biſhop's ſee, ſuffragan to the Archbiſhop of Nicoſia. On the weſt ſide of the iſland there are many ſcattered villages.

PARIUS, in the mythology, the ſon of Pygmalion, by the ivory ſtatue of a woman, which he made, and to which Venus gave life. *Ovid. Met.* X. 297. See PYGMALION.

PAPIA, the ancient name of PAVIA.

PAPIAS, biſhop of Hierapolis, in Phrygia, was the diſciple of St John the Evangeliſt, and the companion of Polycarp, as St Jerome obſerves. He compoſed a work in 5 books, entitled *Expoſitions of the Diſcourſes of our Lord*, of which there are only ſome fragments remaining. He introduced the opinion of the MILLENARIANS.

PAPIER MACHE, a ſubſtance made of cuttings of white or brown paper, boiled in water, and beaten in a mortar, till they are reduced into a kind of paſte, and then boiled with a ſolution of gum arabic or of ſize, to give tenacity to the paſte, which is afterwards formed into different toys, &c. by preſſing it into oiled moulds. When dry, it is done over with a mixture of ſize and lamp-black, and afterwards varniſhed. The black varniſh for theſe toys, according to Dr Lewis, is prepared as follows: Some colophony, or turpentine boiled down till it becomes black and friable, is melted in a glazed earthen veſſel, and thrice as much amber in fine powder ſprinkled in by degrees, with the addition of a little ſpirit or oil of turpentine now and then; when the amber is melted, ſprinkle in the ſame quantity of ſarcocolla, continuing to ſtir them, and to add more ſpirit of turpentine, till the whole becomes fluid; then ſtrain out the clear through a coarſe hair-bag, preſſing it gently between hot boards. This varniſh, mixed with ivory black in fine powder, is applied, in a hot room, on the dried paper paſte; which is then ſet in a gently heated oven, next day in a hotter oven, and the third day in a very hot one, and let ſtand each time till the oven grows cold. The paſte thus varniſhed is hard, durable, gloſſy, and bears liquors hot or cold.

PAPIGO HAVEN, a bay on the eaſt coaſt of Caithneſs; one mile north of Wick.

(I.) * PAPILIO. *n. ſ.* [Lat. *papillon*, Fr.] A butterfly; a moth of various colours.—Conjecture cannot eſtimate all the kinds of *papilios*, natives of this iſland, to fall ſhort of 300. *Ray.*

(II.) PAPILIO, the BUTTERFLY, in zoology; a genus of inſects belonging to the order of lepidoptera. It has four wings, imbricated with a kind of downy ſcales; the tongue is convoluted in a ſpiral form, and the body is hairy. The antennæ grow thicker towards their extremity, and are in moſt ſubjects terminated by a kind of capitulum or head. The wings, when ſitting, are erect, ſo much that their extremities meet or touch one another above the body. They fly in the day-time. The beauties of this elegant part of the creation are well known. The chryſalis is at once the tomb of the caterpillar and the cradle of the butterfly. It is within a ſilken cod, or under a tranſparent veil, that this great miracle of nature is daily wrought. Take one of their cods, make an aperture in it with a pair of ſciſſars, fix it againſt a glaſs; obſerve the inſect, you will perceive the organs gradually diſplaying themſelves; follow his operations with your eye; he ſtruggles to break looſe from his confinement. Obſerve the frothy liquor which it diſgorges; that liquor ſerves to ſoften the end of the cod, which at length yields to the butting of the inſect's head. By degrees the bar is removed, and the butterfly ſprings forth; the impreſſion of the air acts upon its wings, ſlightly apparent at firſt, but which afterwards expand with remarkable rapidity. The diſplay of them is ſometimes checked by drought, in which caſe the inſect is deprived of the faculty of flying. The roſtrum, extended under the covering of the chryſalis, is in this laſt ſtate rolled up into ſpiral, and lodged in a receſs prepared for it. The fly is now perfectly formed; it gently flutters, then takes its flight, and purſues its mazy wanderings over the enamelled meads, plunging its roſtrum into the cups of nectareous flowers." Of the ſpecies of papilio, N° 1, *pl.* CCLXV. Barbut gives the following account: "The peacock, or peacock's eye, is eaſily known by the peacock's eyes which it bears above, four in number, one upon each wing, which has given it the name it has. Its wings, very angulous, are black underneath; above they are of a reddiſh dun colour. The upper ones have on their ſuperior edge two black oblong ſpots, with a yellow one between the two. At their extremity is found the eye, large, reddiſh in the middle, ſurrounded with a yellow circle, accompanied by a ſmall portion of blue towards the exterior ſide. On that ſame ſide, following the direction of the margin, there are five or ſix white ſpots, ſet in order. The inferior wings are browner, and have each a large eye of very dark blue in the middle, ſurrounded by an aſh-colour circle. The caterpillar of this butterfly is of a deep black, dotted with a little white." Of N° 2. he ſays, "The ground colour of the inſect is a beautiful gloſſy black, the ſuperior wings are ornamented with white forked clouds; the inferior ones are adorned with ſpots of a blood-colour, thoſe neareſt the extremities being of a lunular form, and are indented, terminating in an extended tail, and are edged with white. The apex, or crown of the head, is tipt with the ſame red colour which encircles the ſhoulders, and terminates the abdomen the ſpace of about five rings." Of N° 3. (*plate* CCLXI.) he ſays, "The form of the wings reſemble the preceding. They are beautifully variegated with black and yellow; the inferior ones terminate in a tail, and, according to the character of the ſection, are adorned with an eye of a yelloviſh red colour, encircled with blue, which is ſituated at the edge, neareſt the extremity of the abdomen. This is the largeſt, and one of the moſt beautiful inſects England produces. The caterpillar is large and ſmooth, of a bright green colour, with tranſverſal bands, of a deep gloſſy purple upon every ring, which bands are enriched with yellow ſpots; it feeds on wild fennel and other umbelliferous plants; changes into the chryſalis in July, aſſumes the winged ſtate in Auguſt, and frequents meadows. It ſometimes appears in May." Mr Reaumur deſcribes alſo ſome very ſingular ſpecies. One of theſe he calls the *bundle of dry leaves*. This, when in a ſtate of reſt, has wholly the appearance of a little cluſter of the decayed leaves of ſome herb.

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The position and colour of its wings greatly favour this resemblance, and they have very large ribs; wholly like those of the leaves of plants, and are indented in the same manner at their edges as the leaves of many plants are. This frequently may preserve it from birds, &c. The *skull butterfly* is another singular species, so called from its head resembling in some degree a death's head or human skull. This very remarkable appearance is terrible to many people; but it has another yet greater singularity, viz. that when frighted, it has a mournful and harsh voice. This appeared the more surprising to Mr Reaumur, as no other known butterfly had any voice at all; and he was not ready of belief that it was a real voice, but suspected the noise, like that of the cicadæ, to be owing to the attrition of some part of the body; and, in fine, he by great pains discovered that this noise was not truly vocal, but was made by a hard and brisk rubbing of the trunk against two other hard bodies between which it is placed. There is another species, so small that it might be mistaken for a small fly. This is certainly the extreme in degree of size of all the known butterflies, and cannot but have been proportionably small in the state of a caterpillar and chrysalis; this creature spends its whole life in all the three stages of caterpillar, chrysalis, and butterfly, on the leaf of the celandine. It lives on the under side of the leaf, and though in the caterpillar state it feeds on it, yet it does no damage. It does not eat the substance of the leaf, but draws from it only a fine juice, which is soon repaired again, without occasioning any change in the appearance of the leaf. This species is very short-lived; and passes through its three states in so short a time, that there are frequently ten generations of it in one year; whereas, in all the other butterflies, two generations in the year are all that are to be had. There are 273 species, principally distinguished by the colour of their wings. Mr Barbut has divided them into five sections, which he thus characterizes:

1. PAPILIONES DANAI, whose wings are entire; 1. *candidi*, with whitish wings; 2. *festivi*, with variegated wings.

2. PAPILIONES EQUITES, or *riders*, the upper wings being longer from the hindermost angle to the point than to the base; their antennæ are often filiform. They are subdivided into

i. PAPILIONES E. GRÆCI, whose breast has no marks, the small eye being placed at the angle of the anus; and of these some are without bands or fillets, others with bands or fillets.

ii. PAPILIONES E. TROJANI; which for the most part are black, with blood-like spots on the breast.

3. PAPILIONES HELICONIANI, whose wings are narrow throughout, often bare; the upper oblong, the under ones very short.

4. PAPILIONES NYMPHALES, whose wings are denticulated; divided into the *gemmati*, whose wings have eyes; subdivided into those which have eyes on all the wings; those which have them on the upper wings; those which have them on the under ones; and the *phalerati*, whose wings are without eyes.

5. PAPILIONES PLEBEII, whose larva is often contracted; divided into the *rurales*, with darkish spots on their wings; and the *urbicolæ*, with spots generally transparent on their wings.

PAPILIONACEÆ. See BOTANY, *Index*.

* PAPILIONACEOUS. *adj.* [from *papilio*, Lat.] The flowers of some plants are called *papilionaceous* by botanists, which represent something of the figure of a butterfly, with its wings displayed; and here the petala, or flower leaves, are always of a difform figure; they are four in number, but joined together at the extremities; one of these is usually larger than the rest, and is erected in the middle of the flower, and by some called vexillum; the plants that have this flower, are of the leguminous kind; as pease, vetches, &c. *Quincy*.—All leguminous plants are, as the learned say, *papilionaceous*, or bear butterflied flowers. *Harte*.

PAPILLÆ. See MEDICINE, *Index*.

* PAPILLARY. PAPILLOUS. *adj.* [from *papilla*.] Having emulgent vessels, or resemblances of paps. —Malpighi concludes, because the outward cover of the tongue is perforated, under which lie *papillary* parts, that in these the taste lieth. *Derham's Physico-Theology*.—Nutritious materials that slip through the defective *papillary* strainers. *Blackmore*.—The *papillous* inward coat of the intestines is extremely sensible. *Arbuthnot on Aliments*.

PAPILLONS. See METALLURGY, *Part* III. *Sect*. IV.

PAPILLOSUM FOLIUM. See BOTANY, *Gloss*.

PAPILLOUS. See PAPILLARY.

PAPIMOUGOU, a lake of Canada, 210 miles NNE. of Quebec. Lon. 69. 20. W. Lat. 60. 0. N.

PAPIN, Isaac, a French divine, born at Blois, in 1657. He studied divinity and philosophy at Geneva, and Greek and Hebrew at Orleans. The university of Geneva being divided about the doctrine of grace, he wrote a treatise, entitled, "The Faith reduced to its just bounds," recommending toleration; but he met with so little, that he took refuge in England, in 1687, where he was ordained by Dr Turner, Bishop of Ely. Yet, after all, he returned to France, joined the church of Rome, and died at Paris in 1709, while finishing a work, on the Toleration of Protestants, and the authority of the Church.

PAPINIAN, a celebrated Roman lawyer of the 3d century, under Severus; who had so high an opinion of his worth, that he recommended his sons Caracalla and Geta to his care. Caracalla having murdered his brother, ordered Papinian to compose a discourse to excuse this murder to the senate and people; which, when he refused to undertake, the brutal emperor ordered him to be beheaded, and his body dragged through the streets of Rome. Papinian wrote several treatises in the line of his profession.

(1.) * PAPIST. *n. s.* [*papiste*, Fr. *papista*, Lat.] One that adheres to the communion of the pope and church of Rome.—The principal clergyman had frequent conferences with the prince, to persuade him to change his religion, and become a *papist*. *Clarendon*.

(2.) PAPISTS believe the pope or bishop of Rome to be the supreme pastor of the universal church, and believe all the articles of pope Pius's creed, and promise implicit obedience to the edicts of the church, especially the decrees of the council

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PAPYRUS.

PARUS

or Titmouse *Male & Female*

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cil of Trent. See POPE, § 1, 2; POPERY, TRANSUBSTANTIATION, and TRENT.

* PAPISTICAL. *adj.* [from *papiſt.*] Popiſh; adherent to popery.—There are ſome *papiſtical* practitioners among you. *Whitgifte.*

(1.) * PAPISTRY. *n. ſ.* [from *papiſt.*] Popery; the doctrine of the Romiſh church.—*Papiſtry*, as a ſtanding pool, covered and overflowed all England. *Aſcham.*—A great number of pariſhes in England conſiſt of rude and ignorant men, drowned in *papiſtry*. *Whitgifte.*

(2.) PAPISTRY. See POPERY.

PAPOUI, a town of France, in the dep. of Aude, and ci-devant province of Languedoc, on the Lembe; 8 miles N. of Caſtelnaudary, and 35 SE. of Toulouſe. Lon. 2. 10. E. Lat. 43. 21. N.

PAPOZZE, a town of Italia, in the dep. of the Lower Po; diſtrict and late duchy of Ferrara.

PAPPENHEIM, a town of Germany, in the circle of Franconia, and capital of a county ſo named, with a caſtle, where the counts reſide. It is ſeated near the river Altmal, 17 miles NW. of Neuburg, and 32 S. of Nuremburg; is ſubject to its own count; who is hereditary marſhal of the empire, and performs his office at the coronation of the emperor. Lon. 10. 51. E. Lat. 48. 58. N.

PAPPING, a town of Germany, in Auſtria; 8 miles N. of Efferding.

* PAPPOUS. *adj.* [*pappoſus*, low Latin.] Having that ſoft light down, growing out of the ſeeds of ſome plants; ſuch as thiſtles, dandelyon, hawk weeds, which buoys them up ſo in the air, that they can be blown any where about with the wind: and, therefore, this diſtinguiſhes one kind of plants, which is called pappoſa, or pappoſi flores. *Quincy.*—That *pappous* plumage growing upon the tops of ſome ſeeds, whereby they are wafted with the wind, and by that means diſſeminated far and wide. *Ray on the Creation.*—Dandelion, and moſt of the *pappous* kind, have long numerous feathers, by which they are wafted every way. *Derham.*

(1.) PAPPUS, an eminent philoſopher of Alexandria, ſaid by Suidas to have flouriſhed under Theodoſius the Great, who reigned from A. D. 379 to 395. His writings ſhow him to have been a conſummate mathematician: Many of them are loſt; the reſt continued long in MS. detached parts having only been occaſionally publiſhed in the 17th century, until Charles Manoleſſius publiſhed his remains entire at Bologna in 1660, in fol.

(2.) PAPPUS, in botany, a ſoft downy ſubſtance that grows on the ſeeds of certain plants, as thiſtles, hawkweed, &c. ſerving to ſcatter and buoy them up in the air.

* PAPPY *adj.* [from *pap.*] Soft; ſucculent; eaſily divided.—The ground, being ſpungy, ſucked up the water, and the looſened earth ſwelled into a ſoft and *pappy* ſubſtance. *Burnet.*—Its tender and *pappy* fleſh cannot, at once, be fitted to be nouriſhed by ſolid diet. *Ray.*

(1.) PAPS, mountains of Ireland, in Kerry, 8 miles E. of Killarney.

(2.) PAPS OF JURA, four mountains of Scotland, in the iſle of Jura. The three largeſt are deſcribed under JURA, N° 1. The 4th is called *Corra-bhein*, i. e. the *ſteep and rugged peak*, which is ſufficiently deſcriptive of it.

PAPULOSUM FOLIUM. See BOTANY, *Gloſ.*

PAPYRACEOUS. *adj.* Of, or belonging to, or reſembling the PAPYRUS, or PAPER.

(1.) PAPYRUS, the famous reed from which was made the far-famed PAPER of Egypt. There is an opinion generally received in Europe, that this plant is loſt. But Mr Bruce not only ſaw the papyrus growing both in Egypt and Abyſſinia, but actually made paper of it in the manner in which it was made by the ancients. He tells us likewiſe, that, ſo far from any part of it being uſeleſs, the whole plant is at this day uſed in Abyſſinia for making boats, a piece of the acacia tree being put in the bottom to ſerve as a keel, like the boats of ancient Egypt. "The bottom, root, or woody part of this plant, was likewiſe of ſeveral uſes before it turned abſolutely hard; it was chewed in the manner of liquorice, having a conſiderable quantity of ſweet juice in it. This we learn from Dioſcorides; it was, I ſuppoſe, chewed, and the ſweetneſs ſucked out in the ſame manner as is done with ſugar-cane. This is ſtill practiſed in Abyſſinia, where they likewiſe chew the root of the Indian corn, and of every kind of cyperus; and Herodotus tells us, that about a cubit of the lower part of the ſtalk was cut off, and roaſted over the fire, and eaten. From the ſcarcity of wood, which was very great in Egypt, this lower part was likewiſe uſed in making cups, moulds, and other neceſſary utenſils: one uſe of the woody part was, to ſerve for what we call *boards* or *covers* for binding the leaves, which were made of the bark; we know that this was anciently one uſe of it, both from Alcæus and Anacreon." The papyrus grows in the marſhes of Egypt, or in the ſtagnant places of the Nile. Its roots are tortuous, and in thickneſs about 4 or 5 inches; its ſtem is triangular, riſing to the height of ten cubits. The ſtem tapers from the bottom, and terminates in a point. It carries a top or plume of ſmall hairs, and its roots throw to the right and left a great number of ſmall fibres, which ſupport the plants againſt the violence of the wind. See *Pl.* CCLXVIII. Formerly, it uſed to grow in immenſe quantities. The Egyptians made of this plant paper fit for writing, (ſee DIPLOMATICS, and PAPER-MAKING,) which the Greeks called βίβλος or *philuria*, and alſo νηρτος; hence the Latin *charta*; for in general, *charta* is uſed for the paper of Egypt. The ancient botaniſts placed the papyrus among the graminous plants or dog-graſs; ignorant of the particular kind to which it belonged, they were contented to ſpecify it under the name of *papyrus*, of which there were two kinds, that of Egypt, and that of Sicily. The moderns have endeavoured to ſhow, that theſe two plants are one and the ſame ſpecies of cyperus. It is under this genus that they are found in the catalogues and deſcriptions of plants publiſhed ſince the edition of Morriſon's work, where the papyrus is called *cyperus niloticus, vel Syriacus maximus papyraceus.* In the MSS. of the letters and obſervations of M. Lippi, phyſician at Paris, who accompanied the envoy of Lewis XIV. to the emperor of Abyſſinia, we find the deſcription

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ſion of a cyperus which he had obſerved on the banks of the Nile in 1704. After having deſcribed the flowers, he ſays, that many ears, covered with young leaves, are ſupported by a pretty long pedicle; and that many of theſe pedicles, equally loaded and coming from one joint, form a kind of paraſol. The diſk of this paraſol is ſurrounded with a quantity of leaves which form a crown to the ſtem which ſupports it. The ſtem is a pretty long priſm, the corners of which are a little rounded; and the leaves, not at the top, but at the ſide, are formed like the blade of a ſword; the roots are black, and full of fibres; and this plant is called *cyperus Niloticus major, umbella multiplici*. The ſame Lippi deſcribes another kind which riſes not ſo high: the ſtem and leaves correſpond with the former, but the ears form rather a kind of head than any thing like the ſpreading of an umbrella; this head was very ſoft, ſhining, and gilded, rich and airy, much loaded, ſupported by pedicles which were joined together at the bottom, like the knitting of a paraſol. It is called by him *cyperus Niloticus major, aurea diviſa panicula*. Theſe two kinds of cyperus have a marked reſemblance in their leaves, their ſtem, their foliage, and the marſhy places where they grow. The only difference conſiſts in their ſize, and in the poſition of the ears, which ſerve to diſtinguiſh them: and they ſeem to bear a reſemblance to the papyrus and the ſari, deſcribed by ancient authors.

(2.) PAPYRUS OF SICILY, a plant reſembling the Egyptian Papyrus, in Italy called PAPERO, and, according to Cæſalpin, *pipero*. This papyrus of Sicily has been cultivated in the garden of Piſa; and Cæſalpin, who himſelf examined the plant, ſays it is different from the papyrus of Egypt. The papyrus, ſays he, which is commonly called *pipero* in Sicily, has a longer and thicker ſtem than the plant cyperus. It riſes ſometimes to four cubits; the angles are obtuſe, and the ſtem at the baſe, is ſurrounded with leaves growing from the root; there are no leaves on the ſtem even when the plant is at the greateſt perfection, but it carries at the top a large plume, which reſembles a great tuft of diſhevelled hairs; this is compoſed of a great number of triangular pedicles, in the form of reeds; at the extremity of which are placed the flowers, between two ſmall leaves of a reddiſh colour like the cyperus. The roots are woody, about the thickneſs of reeds, jointed, and they throw out a great number of branches which extend themſelves in an oblique direction. Theſe are ſcented ſomewhat like the cyperus, but their colour is a lighter brown: from the lower part iſſue many ſmall fibres, and from the higher a number of ſtems ſhoot up, which, in proportion as they are tender, contain a ſweet juice. The plume of the papyrus of Sicily is pretty well deſcribed in a ſhort account of it in the 2d part of the *Muſæum de Boccone*. This plume is a tuft or aſſemblage of a great number of long ſlender pedicles, which grow from the ſame point of diviſion, are diſpoſed in the manner of a paraſol, and which carry at the top three long and narrow leaves, from which iſſue other pedicles, ſhorter than the former, and terminating in ſeveral knots of flowers. Micheli, in his *Nova Plantarum Genera*, printed at Florence 1728, has given an engraving of one of the long pedicles in its natural length: it is ſurrounded at the baſe with a caſe of about one inch and a half in height; towards the extremity, it carries three long and narrow leaves, and four pedicles, to which are fixed the knots of flowers. Every pedicle has alſo a ſmall caſe ſurrounding its baſe. In ſhort, we find in the *Groſſo-Graphia* of Scheuchzer, a very particular deſcription of the plume of a kind of cyperus, which appears to be the Sicilian plant. From this account it appears that the papyrus of Sicily is well known to botaniſts. It were to be wiſhed that we had as particular a deſcription of the papyrus of Egypt; but theſe two plants have a near affinity to one another; they are confounded together by many authors. Theophraſtus ſays, the *ſari* and the *papyrus nilotica* have a decided character of reſemblance, and only differ in this, that the papyrus ſends forth thick and tall ſtems, which being divided into ſlender plates, are fit for the fabrication of paper; whereas the ſari has ſmall ſtems, conſiderably ſhorter, and altogether uſeleſs for any kind of paper. The papyrus, which ſerved anciently to make paper, muſt not be confounded with the papyrus of Sicily, found alſo in Calabria; for, according to Strabo, the papyrus was to be found in no place excepting Egypt and India. The greateſt part of botaniſts have believed that the Sicilian plant is the ſame with the ſari of Theophraſtus; others have advanced that the papyrus of Egypt and the ſari were the ſame plant in two different ſtages of its exiſtence, or conſidered with reſpect to the greater or leſs height; which, according to them, might depend on the qualities of the ſoil, the difference of the climate, or other accidental cauſes. In proof of this, it is maintained, that there is an eſſential difference between the papyrus growing in the waters, and the ſame plant growing on the banks of rivers and in marſhes. The firſt of theſe have thick and tall ſtems, and a plume in the form of a tuft of hair very long and ſlender, and without any ſeed: the ſecond differs from the firſt in all theſe particulars; it has a ſhorter and more ſlender ſtem, its plume is loaded with flowers, and of conſequence it produces ſeed. In whatever way we conſider theſe facts, it is certain that the difference between the papyrus and the ſari neither depends on climate, nor ſoil, nor on ſituation. The plants whoſe difference depended on theſe circumſtances, both grew in Egypt, and were both employed in the manufacture of paper. But it is an eſtabliſhed fact, that the ſari cannot be employed for this purpoſe. Finally, the papyrus of Sicily began to be known by botaniſts in 1570, 1572, 1583, at which periods the works of Lobel, of Guillandin, and of Cæſalpin, firſt appeared. The ancients had no knowledge of this plant. Pliny makes no mention of it in his Natural Hiſtory; from which it is evident that it was neither uſed in Rome nor in Sicily. If he had ſeen this plant, he muſt have been ſtruck with its reſemblance to the papyrus and the ſari, as they were deſcribed by Theophraſtus; and ſince he gives a particular deſcription of theſe laſt, he would have hinted at their conformity to the Sicilian papyrus.

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(3.) PAPYRUS OF THE E. INDIES. Among many dried plants collected in the East Indies by M. Poivre, there is a kind of papyrus very different from that of Sicily. It carries a plume compoſed of a conſiderable tuft of pedicles, very long, weak, ſlender, and delicate, like ſingle threads, terminating moſt frequently in two or three ſmall narrow leaves, without any knot of flowers between them; hence this plume muſt be altogether barren. Thoſe pedicles or threads are furniſhed with a pretty long membranous caſe, in which they are inſerted; and they iſſue from the ſame point of direction, in the manner of a *paraſol*. The plume, at its firſt appearance, is ſurrounded with leaves like the radii of a crown. The ſtem which ſupports it is about ten feet in height, where there are two feet under water; it is of a triangular form, but the angles are rounded; its thickneſs is about the ſize of a walking ſtaff which fills the hand. The interior ſubſtance, although ſoft and full of fibres, is ſolid, and of a white colour. The ſtem poſſeſſes a certain degree of ſtrength, and is capable of reſiſtance. It bends without breaking; and as it is extremely light, it ſerves for a cane: M. Poivre uſed no other during ſeveral months at Madagaſcar. This ſtem is not of equal thickneſs in its whole length; it tapers inſenſibly from the thickeſt part towards the top. It is without knots, and extremely ſmooth. When this plant grows out of the waters, in places ſimply moiſt, it is much ſmaller, the ſtems are lower, and the plume is compoſed of ſhorter pedicles or threads, terminating at the top in three narrow leaves, a little longer than thoſe at the plume, when the plant grows in the water. From the baſe of theſe leaves iſſue ſmall knots of flowers, arranged as they are in the cyperus; but theſe knots are not elevated above the pedicles; they occupy the centre of the three leaves, between which they are placed, and form themſelves into a ſmall head. The leaves, which ſpring from the root and the lower part of the ſtem, reſemble exactly thoſe in the cyperus. This plant, which the inhabitants call *ſanga-ſanga*, grows in great abundance in their rivers and on their banks, but particularly in the river Tartas, near the Foule-point in Madagaſcar. The inhabitants of theſe cantons uſe the bark of this plant for mats; they make it alſo into ſails, into cordage for their fiſhing-houſes, and into cords for their nets. This kind of papyrus, ſo lately diſcovered, and different from the papyrus of Sicily by the diſpoſition of its flowers, ſhows, that there are two kinds of the cyperus which might eaſily be confounded with the papyrus of Egypt; whether we conſider, on the one hand, to what purpoſes the inhabitants of the places where they grow have made them ſubſervient; or, on the other, compare their form, their manner of growth, and the points in which they reſemble each other. This compariſon can be eaſily made from the accounts which Pliny and Theophraſtus gave of the papyrus of Egypt, and by the figure and deſcription given by Proſper Alpin, after having obſerved the plant on the banks of the Nile. But as Strabo affirms, that the papyrus is found no where but in Egypt and in India, it is poſſible that the papyrus of the iſle of Madagaſcar, ſituated at the mouth of India, is the ſame with that of Egypt. Be that is it may, the inhabitants of this iſland have never derived from it thoſe advantages which have immortaliſed the papyrus of Egypt.

PAQUASH, a lake of N. America. Lon. 93. 30. W. Lat. 50. 48. N.

(1.) * PAR. *n. ſ.* [Latin.] State of equality; equivalence; equal value. This word is not elegantly uſed, except as a term of traffick.—To eſtimate the *par*, it is neceſſary to know how much ſilver is in the coins of the two countries. *Locke.*—Exchequer bills are below *par*. *Swift.*—The reſt of the great officers are much upon a *par*. *Swift.*

(2.) PAR, *adj.* [Lat. equal.] in commerce, ſignifies any two things equal in value. See EXCHANGE.

(1.) PARA, or *Belem*, a province of S. America, in Guiana, comprehending that part of Guiana which belongs to the Portugueſe, on the north bank of the Amazon, extending from its junction with the Madeira to the Atlantic; 600 miles from E. to W. and 200 from N. to S. See GUIANA, N° III. Its government extends over 117 Indian villages, over which a Portugueſe governor preſides.

(2.) PARA, a town of Brazil, with a fortreſs and walls, on the SE. bank of the river, (N° 3.) ſeated on a high rock. Tobacco, ſugar, and cotton are its chief commodities. Lon. 50. 0. W. Lat. 1. 30. S.

(3.) PARA, a river of Brazil, which riſes about Lat. 6. 10. S. and, after running 200 miles, falls into the E. branch of the Amazon, near its mouth.

PARABITTA, a town of Naples, in Otranto, 10 miles NW. of Aleſſano.

(1.) * PARABLE. *n. ſ.* [παραβολη; *parabole*, Fr.] A ſimilitude; a relation under which ſomething elſe is figured.—Balaam took up his *parable* and ſaid. *Numbers*, xxiii. 7.—In the *parable* of the talents, our Saviour plainly teacheth us, that men are rewarded according to the improvements they make. *Nelſon.*—

What is thy ſaltſome *parable* to me? *Dryden.*

(2.) *A* PARABLE is a fable or allegorical inſtruction, founded on ſomething real or apparent in nature or hiſtory, from which a moral is drawn by comparing it with ſomething in which the people are more immediately concerned; ſuch are the parables of Dives and Lazarus, of the Prodigal Son, of the Ten Virgins, &c. Dr Blair obſerves that "It was univerſally the mode throughout all the eaſtern nations to convey ſacred truths under myſterious figures and repreſentations." See ALLEGORY.

(3.) * PARABLE. *adj.* [*parabilis*, Latin.] Eaſily procured. Not in uſe.—They were not well wiſhers unto *parable* phyſic, remedies eaſily acquired, who derived medicines from the phœnix. *Brown.*

(1.) * PARABOLA. *n. ſ.* [Latin.] The *parabola* is a conick ſection ariſing from a cone's being cut by a plane parallel to one of its ſides, or parallel to a plane that touches one ſide of the cone. *Harris.*—Had the velocities of the ſeveral planets being greater or leſs than they are now, at the ſame diſtances from the ſun, they would not have revolved in concentrick circles as they do, but have

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have moved in hyperbolas or *parabolas*, or in ellipses, very excentrick. *Bentley's Sermons.*

(2.) PARABOLA. See CONIC SECTIONS, *Index.*

PARABOLANI. See CONFECTOR.

PARABOLE. *n. f.* See ORATORY, § 228.

* PARABOLICAL. PARABOLICK. *adj.* [*parabolique*, Fr. from *parable.*] 1. Expressed by parable or similitude.—Such from the text decry the *parabolical* exposition of Cajetan. *Brown's Vulgar Err.*—The scheme of these words is figurative, as being a *parabolical* description of God's vouchsafing to the world the invaluable blessing of the gospel, by the similitude of a king. *South.* 2. Having the nature or form of a parabola, [from *parabola.*]—The pellucid coat of the eye doth not lie in the same superficies with the white, but riseth up a hillock above its convexity, and is of an hyperbolical or *parabolical* figure. *Ray.*—The incident ray will describe, in the refracting medium, the *parabolick* curve. *Cheyne's Phil. Prin.*

* PARABOLICALLY. *adv.* [from *parabolical.*] 1. By way of parable or similitude.—These words, notwithstanding *parabolically* intended, admit no literal inference. *Brown's Vulgar Errours.* 2. In the form of a parabola.

(1.) PARABOLIC. *adj.* See PARABOLICAL.

(2.) PARABOLIC CONOID, a solid, generated by the rotation of a parabola about its axis.

(3.) PARABOLIC PYRAMIDOID, a solid figure, so named by Dr Wallis from its formation. Thus let all the squares of the ordinates of a parabola be so placed, that the axis shall pass perpendicularly through all their centres, then the aggregate of all these planes will form the aggregate of the parabolic pyramidoid. It is equal to half its circumscribed parallelopipedon. The solid content is found by multiplying the base by the altitude, and taking half the product.

(4.) PARABOLIC SPACE, the space included by the curve line and base of the parabola.

(5.) PARABOLIC SPINDLE, a solid figure formed by the rotation of a parabola about its base.

(6.) PARABOLIC SPIRAL, a curve arising from the supposition that the parabola is bent till the axis come into the periphery of a circle, the ordinates still retaining their places with respect to the circle.

PARABOLIFORM. *adj.* Having the form of a PARABOLA.

* PARABOLISM. *n. f.* In algebra, the division of the terms of an equation, by a known quantity that is involved or multiplied in the first term. *Dict.*

* PARABOLOID. *n. f.* [παραβολὴ and εἶδος.] A paboliform curve in geometry, whose ordinates are supposed to be in subtriplicate, subquadruplicate, &c. ratio of their respective abscissæ. There is another species; for if you suppose the parameter, multiplied into the square of the abscissa, to be equal to the cube of the ordinate, then the curve is called a semicubical *paraboloid. Harris.*

PARABOLOIDES, *n. f.* parabolas of the higher orders. The equation for all curves of this kind being $a^{m-n} x^n = y^m$, the proportion of the area of any one to the complement of it to the circumscribing parallelogram will be as m to n.

PARABOSCO, Jerome, an Italian dramatic writer of the 16th century; who wrote several comedies and some novels, in the style of Boccace, under the title of *Diporti di Girolemo Parabosco*: printed at Venice, in 8vo, in 1558.

PARAC, a town of Bornio, 100 miles N. of Banjar Massin.

PARACA, a town of Peru, 6 miles from Pisco.

PARACELSISTS. See THEOSOPHISTS.

PARACELSUS, Aurelius Philip Theophrastus Bombastus, de Hohenheim, a famous physician, born at Einsilden, in the canton of Schweitz. He was educated with great care by his father, who was the natural son of a prince, and made a rapid progress in the study of physic. He afterwards travelled into France, Spain, Italy, and Germany. In his return to Switzerland, he stopped at Basle, where he read lectures on physic in the German tongue. He was one of the first who made use of chemical remedies with success, by which he acquired great reputation. See MEDICINE, *Index.* He gloried in destroying the method established by Galen, and thus drew upon himself the hatred of the other physicians. It is said, that he boasted of being able, by his remedies, to preserve the life of man for several ages; but he himself experienced the vanity of such boasting, by dying at Saltzburg, in 1504, at 37 years of age according to some, or 48 according to others. The best edition of his works is that of Geneva in 1658, in 3 vols. folio.

(1.) * PARACENTESIS. *n. f.* [παρακεντέω, παρὰ and κεντέω, to pierce; *paracentese*, Fr.] That operation, whereby any of the venters are perforated to let out any matter; as tapping in a tympany. *Quincy.*

(2.) PARACENTESIS. See SURGERY.

* PARACENTRICAL. } *adj.* [παρὰ and κέντρον.]

(1.) * PARACENTRICK. } Deviating from circularity.—Since the planets move in the elliptick orbits, in one of whose foci the sun is, and, by a radius from the sun, describe equal areas in equal time, we must find out a law for the *paracentrical* motion, that may make the orbits elliptic. *Cheyne's Phil. Prin.*

(2.) PARACENTRIC MOTION, the motion or space by which a revolving planet approaches nearer to or recedes farther from the sun, or centre of attraction.

(3.) PARACENTRIC SOLICITATION OF GRAVITY, the same with the CENTRIPETAL FORCE. See FORCE, § 2.

PARACHUTE, *n. f.* a large and strong kind of umbrella, invented by M. Blanchard, the French aeronaut, to break a person's fall from an air balloon; in case of any accident happening to it at a high elevation. By means of his parachute, he, on different occasions, let fall from his balloon, dogs and other animals, without their receiving any hurt. At last he ventured to descend himself, but falling among trees, he broke one of his legs. Citizen Garnerin was more successful. He ascended, Oct. 21st, 1797, from the garden of Monceaux, at half past 5 p.m. Between the balloon and the car in which he sat, was placed the parachute, half opened, and forming a kind of tent over him; and when the apparatus was at a considerable height, he separated the parachute and car from the

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the balloon. The parachute, unfolding itſelf, was by his weight and that of the car, drawn down towards the earth. Its deſcent was at firſt ſlow and vertical; but ſoon exhibited a vibration and rotation gradually increaſing, like that of a leaf falling from a tree; but he reached the ground unhurt. He afterwards made the experiment in London, and at different cities on the continent, with equal ſucceſs. This parachute was of cloth; and its diameter, when unfolded, about 25 feet. Such an inſtrument might be extremely uſeful in ſaving lives when accidental fires happen. To uſe a parachute with ſucceſs, the car ought to be ſuſpended at a conſiderable diſtance from the parachute, that the centre of gravity of the whole may be vertically below the centre of reſiſtance, made by the air, to the deſcent of the parachute; elſe the parachute will incline to one ſide, deſcend obliquely, oſcillate, and the ſmalleſt irregularity in its figure will cauſe it to turn round its vertical axis.

PARACLET, the COMFORTER, a name given to the Holy Ghoſt.

PARACUSIS. See MEDICINE, *Index*.

(1.) * PARADE. *n. ſ.* [*parade*, Fr.] 1. Shew; oſtentation.—He is not led forth as to a review, but as to a battle; nor adorned for *parade*, but execution. *Granville.*—

Be rich; but of your wealth make no *parade*,
At leaſt, before your maſter's debts are paid.
Swift.

2. Proceſſion; aſſembly of pomp.—

The rites perform'd, the parſon paid,
In ſtate return'd the grand *parade*. *Swift.*

3. Military order.—

The cherubim ſtood arm'd
To their night-watches in warlike *parade*. *Milt.*

4. Place where troops draw up to do duty and mount guard. 5. Guard; poſture of defence.—Accuſtom him to make judgment of men by their inſide, which often ſhows itſelf in little things, when they are not in *parade*, and upon their guard. *Locke on Education.*

(2.) PARADE, in a military ſenſe, is the place where troops aſſemble or draw together, to mount guard, &c.

(3.) PARADE, in fencing, implies the action of parrying or turning off any thruſt.

(4.) PARADE, in geography, a town of France, in the dep. of Lot and Garonne; 6 miles E. of Tonneins.

(5.) PARADE DE BOURO, a town of Portugal, in the prov. of Entre-Duero-e-Minho; 16½ miles NNE. of Braga.

PARADELLA, a town of Portugal, in Beira; 12 miles SE. of Lamego.

PARADES, a town of Spain, in Seville.

* PARADIGM. *n. ſ.* [παραδειγμα.] Example.

PARADIN, William, a French hiſtorian of the 16th century born at Cuiſeaux, near Chalons, was author of a great number of works; particularly the Hiſtory of Ariſtæus reſpecting the verſion of the Pentateuch; and *Memoralia inſignium Franciæ familiarum.*

(1.) PARADIS, Paul, a learned Venetian, who firſt taught the Hebrew language in the Royal college of Paris; and wrote ſome pieces on it.

(2.) PARADIS. See MONCRIF.

(1.) * PARADISE. *n. ſ.* [παραδεισος; *paradiſe*, Fr.] 1. The bliſsful regions in which the firſt pair was plac'd.—

Longer in that *paradiſe* to dwell,
The law I gave to nature him forbids. *Milton.*

2. Any place of felicity.—

Leaving his body as a *paradiſe*,
T' invelope and contain celeſtial ſpirits. *Shak.*
If he ſhould lead her into a fool's *paradiſe*,
It were very groſs behaviour. *Shak. Rom. & Jul.*
Why, nature, bower the ſpirit of a fiend
In mortal *paradiſe* of ſuch ſweet fleſh? *Shak.*
The earth
Shall all be *paradiſe*. *Milton.*

(2.) PARADISE is principally uſed for the garden of Eden, in which Adam and Eve were placed immediately upon their creation. There have been many inquiries about its ſituation. But concerning the exact place we muſt ever remain uncertain, if indeed it can be thought at all to exiſt at preſent, conſidering the many changes which have taken place on the ſurface of the earth ſince the creation.

(3.) PARADISE, BIRD OF. See PARADISEA.

(4.) PARADISE, MAHOMETAN. "The paradiſe of the Mohammedans is ſaid by them to be ſituated above the ſeven heavens, or in the ſeventh, and next under the throne of God; and, to expreſs the amenity of the place, they tell us that the earth of it is of the fineſt wheat flour, or of the pureſt muſk, or of ſaffron; and that its ſtones are pearls and jacinths, the walls of its building enriched with gold and ſilver, and the trunks of all its trees of gold, amongſt which the moſt remarkable is the tree *tuba*, or tree of happineſs. They pretend that this tree ſtands in the palace of Mohammed, though a branch of it will reach to the houſe of every true believer, loaded with pomegranates, dates, grapes, and other fruits, of ſurpriſing bigneſs, and delicious taſtes, unknown to mortals. If a man deſires to eat of any particular kind of fruit, it will immediately be preſented to him; or if he chooſes fleſh, birds ready dreſſed will be ſet before him, and ſuch as he may wiſh for. They add, that this tree will ſupply the bleſſed, not only with fruit, but with ſilk garments alſo, and beaſts to ride on, adorned with rich trappings, all which will burſt forth from the fruit; and that the tree is ſo large, that a perſon mounted on the fleeteſt horſe would not be able to gallop from one end of its ſhade to the other in 100 years. Plenty of water being one of the greateſt additions to the pleaſantneſs of any place, the Alcoran often ſpeaks of the rivers of paradiſe as the principal ornament. Some of theſe rivers are ſaid to flow with water, ſome with milk, ſome with wine, and others with honey: all of them have their ſources in the root of this tree of happineſs; and, as if theſe rivers were not ſufficient, we are told that the garden of this paradiſe is alſo watered by a great number of leſſer ſprings and fountains, whoſe pebbles are rubies and emeralds, their earth of camphor, their beds of muſk, and their ſides of ſaffron. But all theſe glories will be eclipſed by the reſplendent and exquiſite beauty of the girls of paradiſe, the enjoyment of whoſe com-

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pany will conſtitute the principal felicity of the faithful. Theſe (they ſay) are not formed of clay, as mortal women, but of pure muſk; and are, as their prophet often affirms in his Alcoran, free from all the natural defects and inconveniences incident to the ſex. Being alſo of the ſtricteſt modeſty, they keep themſelves ſecluded from public view, in pavilions of hollow pearls, ſo large, that as ſome traditions have it, one of them will be no leſs than 26, or, as others ſay, 60 miles long, and as many broad. With theſe the inhabitants of paradiſe may taſte pleaſures in their height; and for this purpoſe will be endowed with extraordinary abilities, and enjoy a perpetual youth."

(5.) PARADISE SOUND, a bay of Newfoundland, on the NW. coaſt of Placentia. Lon. 54. 25. W. Lat. 47. 30. N.

PARADISEA, in ornithology; a genus of birds belonging to the order of picæ. The beak is covered with a belt or collar of downy feathers at the baſe; and the feathers on the ſides are very long. See *Plate* 263. "Birds of this genus (ſays Latham) have the bill ſlightly bending; the baſe covered with velvet-like feathers. The noſtrils are ſmall, and concealed by the feathers. The tail conſiſts of 10 feathers; the two middle ones, and ſometimes more in ſeveral of the ſpecies, are very long, and webbed only at the baſe and tips. The legs and feet are very large and ſtrong: they have 3 toes forward, one backward, and the middle connected to the outer one as far as the firſt joint. The whole of this genus have, till lately, been very imperfectly known; few cabinets poſſeſſing more than one ſpecies, viz. the Greater, or what is called the *common bird of Paradiſe*; nor has any ſet of birds given riſe to more fables, the various tales concerning which are to be found in every author; ſuch as, their never touching the ground from their birth to death; living wholly on the dew; being produced without legs; and an hundred ſuch ſtories, too ridiculous even to mention. This laſt error is hardly yet wholly eradicated. The Portugueſe firſt found theſe birds on the iſland of Gilolo, the Papua iſlands, and New Guinea; and they were known by the name of *birds of the ſun*. The inhabitants of Ternate call them *manuco dewata, the bird of God*; whence the name *manuco diata*, uſed by ſome naturaliſts, is derived. The peculiar length and ſtructure of their ſcapular feathers hinders them from ſettling, in high winds, on trees; and when they are thrown on the ground by theſe winds, they cannot riſe again. When taken by the natives, they are immediately killed, and they defend themſelves with great courage with their formidable bills. Latham enumerates 8 ſpecies, but ſuſpects there may be more.

1. PARADISEA ALBA, the *white bird of Paradiſe* is the moſt rare, and has two varieties; one quite white, and the other black and white. The former is very rare. The ſecond has the fore part black, and the back part white; with 12 crooked wiry ſhafts, which are almoſt naked, though, in ſome places, covered with hairs.

2. PARADISEA MAXIMA, the *largeſt bird of Paradiſe*, is commonly 2 feet 4 inches long; the head is ſmall; the bill hard and long, of a pale colour. The head and back part of the neck is lemon-coloured, a little black about the eyes; about the neck, of the brighteſt gloſſy emerald green, ſoft like velvet; as is alſo the breaſt, which is black; the wings are large, and cheſnut coloured; the back part of the body is covered with long, ſtraight, narrow feathers, of a pale brown colour, ſimilar to the plumes of the oſtrich. Theſe feathers are ſpread when the bird is on the wing; for which reaſon he can keep very long in the air. On both ſides of the belly are two tufts of ſtiff and ſhorter feathers of a golden yellow, and ſhining. From the rump proceed two long ſtiff ſhafts, which are feathered on their extremities. Theſe birds are found at the Aroo iſlands, 15 Dutch miles E. of Key, during the W. or dry monſoon; and they return to New Guinea as ſoon as the E. or W. monſoon ſets in. They come always in a flock of 30 or 40, and are led by a bird which the inhabitants of Aroo call the *king*. This leader is black, with red ſpots; and conſtantly flies higher than the reſt of the flock, which never forſake him, but ſettle as ſoon as he ſettles; a circumſtance that frequently proves their ruin when the king lights on the ground, whence they are not able to riſe on account of the ſingular ſtructure and diſpoſition of their plumage. They are likewiſe unable to fly with the wind, which would ruin their looſe plumage; but take their flight conſtantly againſt it, cautious not to venture out in hard blowing weather, as a ſtrong wind frequently obliges them to come to the ground. During their flight they cry like ſtarlings. Their note, however, approaches more to the croaking of ravens; which is heard very plainly when they are in diſtreſs from a freſh gale blowing on the back of their plumage. In Aroo, they ſettle on the higheſt trees, eſpecially on the ficus benjamina of the hortus malabaricus, commonly called the *waringa tree*. The natives catch them with bird-lime, or in nooſes, or ſhoot them with blunt arrows; dry and fumigate the bodies with ſulphur or ſmoke, and ſell them at Banda for half a rixdollar each; but at Aroo they may be bought for a ſpike-nail or a piece of old iron. Flocks of theſe birds are often ſeen flying from one iſland to the other againſt the wind. During the E. monſoon their tails are moulted, ſo that they have them only during 4 months of the W. monſoon.

3. PARADISEA MINOR, the *ſmaller bird of Paradiſe* is about 29 inches long. His beak is lead-coloured, and paler at the point. The eyes are ſmall, and incloſed in black about the neck. The head and back of the neck are of a dirty yellow; the back of a greyiſh yellow; the breaſt and belly of a duſky colour; the wings ſmall, and cheſnut-coloured. The long plumage is about a foot in length, and paler than in the large ſpecies; as in general the colours of this ſpecies are leſs bright than the former; though in moſt other reſpects they are alike. They likewiſe follow a leader, who is blacker, with a purpliſh caſt, and finer in colour than the reſt. The neck and bill are larger in the male than in the female. They rooſt on the tops of the higheſt trees, and do not migrate. The natives ſear the birds with a hot iron, and put them in a tube of bamboo for preſervation.

4. PARADISEA NIGRA AMBOINENSIS, a ſpecies

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of the *black bird of Paradise*, ſeen in Amboyna in 1689. This was only one foot in length, with a fine purple hue, a ſmall head, and a ſtraight bill. On its back, near the wings, are feathers of a blue and purple colour, as on the other birds of Paradiſe; but under the wings, and over all the belly, they are yellow coloured, as in the common ſort: on the back of the neck they are mouſe-coloured, mixed with green. Before the wings are two roundiſh tufts of feathers, which are green edged, and may be moved at pleaſure by the bird, like wings. Inſtead of a tail, it has 12 or 13 black, naked, wire-like ſhafts, hanging promiſcuouſly like feathers. Its legs are ſtrong, and have ſharp claws. The head and eyes are remarkably ſmall; the latter are ſurrounded with black.

5. PARADISEA NIGRA MAJOR, the *large black bird of Paradiſe*, is brought without wings or legs for ſale; ſo that no accurate deſcription of it hath yet been given. Its figure, when ſtuffed, is narrow and round, but ſtretched in length to the extent of four ſpans. The plumage on the neck, head, and belly, is black and velvet-like, with a ſtrong hue of purple and gold. The bill is blackiſh, and one inch long. On both ſides are two bunches of feathers, which appear like wings. The plumage is ſoft, broad, ſimilar to peacocks feathers, with a glorious gloſs and greeniſh hue. The feathers of the tail are of unequal length; thoſe next to the belly are narrow, like hair; the two uppermoſt are much longer, and pointed; thoſe immediately under them are a ſpan and a half longer than the upper ones; they are ſtiff, on both ſides fringed with a plumage like hair, black above, but gloſſy below. Birds of this ſpecies are brought only from one particular place of New Guinea.

6. PARADISEA NIGRA MINOR, the *ſmall black bird of Paradiſe*, has plumage equal in length, but thinner in body, black above, and without any remarkable gloſs, not having thoſe ſhining peacock feathers which are found on the greater ſpecies. It wants likewiſe the 3 long pointed feathers of the tail which the larger black ſpecies has.

7. PARADISEA REGALIS, or REGIS, the *king's bird*, is about 7 inches long, and ſomewhat larger than a titmouſe. Its head and eyes are ſmall; the bill ſtraight; the eyes included in circles of black plumage; the crown of the head is flame-coloured; the back of the neck blood-coloured; the neck and breaſt of a cheſnut colour, with a ring of the brighteſt emerald green. Its wings are in proportion ſtrong; and the quill-feathers dark, with red ſhining plumes, ſpots, and ſtripes. The tail is ſtraight, ſhort, and brown. Two long naked black ſhafts proceed from the rump, at leaſt a hand-breadth beyond the tail; having at their extremities, ſemilunar twiſted plumage, of the moſt glaring green colour above, and duſky below. The belly is white and green ſprinkled; and on each ſide is a tuft of long plumage, feathered with a broad margin, being on one ſide green, and on the other duſky. The back is blood-red and brown, ſhining like ſilk. The legs are in ſize like thoſe of a lark, three fore toes and one back toe. This bird aſſociates not with any of the other birds of Paradiſe; but flits ſolitary from buſh to buſh, wherever he ſees red berries, without ever mounting on tall trees.

* PARADISIACAL. *adj.* [from *paradiſe*.] Suiting paradiſe; making paradiſe.—The ancients expreſs the ſituation of *paradiſiacal* earth, in reference to the ſea. *Burnet.*—Such a mediocrity of heat would be ſo far from exalting the earth to a more happy and *paradiſiacal* ſtate, that it would turn it to a barren wilderneſs. *Woodw. Nat. Hiſt.*—The ſummer is a kind of heaven, when we wander in a *paradiſiacal* ſcene, among groves and gardens. *Pope.*

PARADISUS, a town of Syria. *Plin. Strab.*

(1.) * PARADOX. *n. ſ.* [*paradoxe*, French; παράδοξον.] A tenet contrary to received opinion; an aſſertion contrary to appearance; a poſition in appearance abſurd.—A gloſs there is to colour that *paradox*. *Hooker.*

You undergo too ſtrict a *paradox*,
Striving to make an ugly deed look fair. *Shak.*

—'Tis an unnatural *paradox* in the doctrine of cauſes, that evil ſhould proceed from goodneſs. *Holyday.*—It is true, though it may ſeem a *paradox*, that in their hatred of ſin, men may be ſometimes too paſſionate. *Spratt.*—'Tis not poſſible for any man in his wits, though never ſo much addicted to *paradoxes*, to believe otherwiſe but that the whole is greater than the part. *Wilkins.*

(2.) PARADOX. No ſcience abounds more with paradoxes than geometry: thus, that a right line ſhould continually approach to the hyperbola, and yet never reach it, is a true paradox; and in the ſame manner, a ſpiral may continually approach to a point, and yet not reach it in any number of revolutions, however great. See *M'Laurin's Fluxions*. See LOGARITHMS, *Sect.* IV.

(3.) PARADOX, HYDROSTATIC. See HYDROSTATICS, *Part* I. *Sect.* IV.

PARADOXI, a ſort of mimes or buffoons among the ancients, who entertained the people with extempore effuſions of drollery. They were alſo called PARADOXOLOGI, ORDONARI, *Neanicologi*, and *Aretalogi*. See MIMI, § 1, 2.

* PARADOXICAL. *adj.* [from *paradox*.] 1. Having the nature of a paradox.—What hath been every where opinioned by all men, is more than *paradoxical* to diſpute. *Brown.*—Strange it is, how the curioſity of men that have been active in the inſtruction of beaſts, among thoſe many *paradoxical* and unheard-of imitations, ſhould not attempt to make one ſpeak. *Brown.*—Theſe will ſeem ſtrange and *paradoxical* to one that takes a proſpect of the world. *Norris.* 2. Inclined to new tenets, or notions contrary to received opinions.

* PARADOXICALLY. *adv.* [from *paradox*.] In a paradoxical manner; in a manner contrary to received opinions.—If their vanity of appearing ſingular puts them upon advancing paradoxes, and proving them as *paradoxically*, they are uſually laught at. *Collier.*

* PARADOXICALNESS. *n. ſ.* [from *paradox*.] State of being paradoxical.

PARADOXOLOGI. See PARADOXI.

* PARADOXOLOGY. *n. ſ.* [from *paradox*.] The uſe of paradoxes.—Perpend the difficulty, which obſcurity or unavoidable *paradoxology* muſt put upon the attempter. *Brown.*

PARÆ-

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PARÆTACÆ, or PARÆTACENI, an ancient people, who inhabited the country between Media and Perſia; where Antigonus was defeated by Eumenes. *C. Nep. Strab.* xi, xvi; *Plin.* vi, 26.

PARÆTONIUM, an ancient town of Egypt, near Alexandria, where Iſis was worſhipped. *Strabo*, xvii.

PARAGUADÆ, among the ancient Romans, wreaths of gold, or ſilk and gold, interwoven in, not ſewed to, their garments. The garment was ſometimes of one colour, with one paragauda; ſometimes of two colours, with two paragaudæ; or three colours, with three, &c. They were worn both by men and women.

PARAGO, a large iſland of Aſia, in the Indian Ocean, between Borneo and the Philippines, governed by a king who is tributary to Borneo. The Spaniards have a fort in it.

(1.)* PARAGOGE. *n. ſ.* [παραγωγη; *paragoge*, Fr.] A figure whereby a letter or ſyllable is added at the end of a word, without adding any thing to the ſenſe of it; as *vaſt*, *vaſtly*. *Diſt.*

(2.) PARAGOGE is a ridiculous figure in the ancient languages, from which our modern Engliſh is happily free. Dr JOHNSON erred in giving an example from the Engliſh language, which affords not one. *Vaſtly* is not a paragoge. It is an *adverb*, and has evidently a different ſenſe and uſe, from the original *adjective*, *vaſt*. We have no ſuch uſeleſs unmeaning ſyllabical adjections as the Greeks and Romans; as *egomet* for *ego*; *dicier*, for *dici*, &c.

PARAGOGICAL, *adj.* Belonging to a paragoge.

(1.) * PARAGON. *n. ſ.* [*paragon*, from *parage*, equality, old French; *paragone*, Italian.] 1. A model; a pattern; ſomething ſupremely excellent.—

An angel! or, if not,
An earthly *paragon*. *Shak.*

—Tunis was never graced before with ſuch a *paragon* to their queen. *Shak.* 2. Companion; fellow.—

Alone he rode without his *paragon*. *Spenſer.*

(2.) PARAGON, in geography, one of the largeſt of the Calamianes Iſlands; in the E. Indian Sea.

* *To* PARAGON. *v. a.* [*paragonner*, French.] 1. To compare; to parallel; to mention in competition.—The picture of Pamela, in little form, he wore in a tablet, purpoſing to *paragon* the little one with Arteſia's length. *Sidney.*—

I will give thee bloody teeth,
If thou with Cæſar *paragon* again,
My man of men. *Shak.*

Proud ſeat
Of Lucifer, ſo by alluſion call'd
Of that bright ſtar to Satan *paragon'd*. *Milton.*

2. To equal; to be equal to.—

He hath achiev'd a maid
That *paragons* deſcription and wild fame. *Shak.*

Catharine our queen, before the primeſt creature
That's *paragon'd* i' th' world. *Shak.*

(1.) * PARAGRAPH. *n. ſ.* [*paragraphe*, Fr. παραγραφη.] A diſtinct part of a diſcourſe.—Of his laſt *paragraph* I have tranſcribed the moſt important parts. *Swift.*

(2.) *A* PARAGRAPH is properly a ſection or diviſion of a chapter; and in references is marked thus, ¶.

PARAGRAPHICAL, *adj.* Diſpoſed into proper paragraphs. *Aſh.*

* PARAGRAPHICALLY. *adv.* [from *paragraph*.] By paragraphs; with diſtinct breaks or diviſions.

PARAGUA, the moſt weſterly of the PHILIPPINES. It is 180 miles long, 21 broad, and 195 ENE. of Mindanao. Lon. 135. 30. E. of Ferro. Lat. 10. 0. N.

(1.) PARAGUAY, or LA PLATA, an extenſive country of S. America, bounded on the N. by Amazonia and the river Amazon; on the E. by Brazil; on the S. by Patagonia; and on the W. by Chili and Peru. This country was firſt diſcovered by Sebaſtian Cabot. It was not however, thoroughly reduced, till the Jeſuits obtained poſſeſſion of it. A few of theſe went to Paraguay ſoon after the city of Aſſumption was founded, and converted about 50 Indian families, who ſoon induced many others to follow their example, on account of the peace and tranquillity they enjoyed under the fathers. They had long reſiſted the Spaniards and Portugueſe; but the Jeſuits, by learning their language, conforming to their manners, &c. ſoon acquired great authority among them: till at laſt, by ſteadily purſuing the ſame artful meaſures, they arrived at the higheſt degree of power and influence, being in a manner the abſolute ſovereigns of a great part of this extenſive country; for above 350,000 families are ſaid to have been ſubject to them, living in obedience and awe bordering on adoration, yet procured without the leaſt violence or conſtraint. A particular account of the miſſions of Paraguay, was publiſhed by Don George Juan, about 1753, but the Society of the Jeſuits having been ſince totally aboliſhed, it is now no longer intereſting; though that Society certainly had great merit in eſtabliſhing their government ſo completely, and yet with ſo much mildneſs, over a foreign people. The country is divided into 6 provinces; viz. PARAGUAY PROPER, PARANA, GUAYRA, URUGUAY, TUCUMAN, and LA PLATA. It has numerous lakes and rivers; of the latter the 3 principal are the Paraguay, Uraguay and Parana which uniting form the PLATA. Theſe rivers, by overflowing their banks occaſionally, render the ſoil of this country extremely fertile. It is one continued plain for ſeveral hundred miles, though elſewhere diverſified with mountains, foreſts and marſhes: but the whole of it is not under the Spaniards; many parts of it indeed being ſtill unknown. It produces ſugar-canes, indigo, pimento, ipecacuanha, tobacco, and cotton, in great abundance; the valuable herb called PARAGUAY; (See N° 4.) with rice, corn, flax, hemp, maize, manioc, potatoes, and a vaſt variety of fruits and other vegetables, unknown in Europe. The foreſts abound with bees and honey. The climate is mild and ſerene. In 1734, the population of the *Guayranies* was eſtimated, upon an exact calculation, at 30,000 families, who inhabited 32 towns; and the *Chiquito* Indian converts poſſeſſed 7 towns. Theſe Guayranies had inhabited a country

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a country 300 miles NW. of the Guayra; but having suffered much from the inroads of the Portuguese, who carried off and made slaves of them, they emigrated in a body of above 12,000 into this country, and settled under the Jesuits. In 1757, the Spanish government exchanged the territory on the E. bank of the Uruguay with the Portuguese, for the colony of St Sacrament, which rendered the Uruguay the boundary between their respective settlements. In 1767, the court expelled the Jesuits; and the people were put upon the same footing with the other Indians of the Spanish part of S. America. Paraguay abounds with horses, mules, sheep, and black cattle; and the wild cattle are so numerous that they kill them only for their hides.

(2.) PARAGUAY, a river in the above country, which rises in about Lon. 40. 0. W. of Ferro, between 5° and 6° Lat. S. It runs a long course almost due S. till it joins the Uruguay and Parana, and forms the great river LA PLATA, in Lon. 42. 50. W. Ferro. Lat. 28. 0. S.

(3.) PARAGUAY PROPER, one of the 6 provinces, into which the Spanish part of the above country is divided.

(4.) PARAGUAY, or PARAGUAY TEA, } in botany, a valuable plant, which grows naturally in the above country, and is extremely useful both as food and medicine. It is a middle-sized tree, resembling an orange tree, and tasting like mallows. The leaves are the part chiefly used. The natives make 3 gatherings annually; 1st, of the buds, before they unfold into leaves: these are reckoned best, but soonest decay: 2d, of the full grown leaves, at their first expansion; and 3d, of the leaves, when they have remained on the tree for some time after they are fully blown. These leaves are roasted, and kept in pits under ground for sale. Quantities to the value of 100,000l. are annually exported to Peru and Chili. These trees grow naturally in the moraſſes on the E. bank of the Paraguay; but are now dispersed and cultivated all over the country. The leaves are thus used; being dried and reduced almost to powder, they are put into a cup, with sugar and lemon juice; boiling water is then poured on, and the infusion drank. They are said to be of service in all disorders of the head, breast and stomach; to allay hunger, and to purify all kinds of water; to preserve the miners from the noxious effect of the minerals; and to be a sovereign remedy in scurvy and putrid fevers. Mr Lee ranks this plant as a species of Ilex. See ILEX.

(1.) PARAIBA, or PARAYBA, the most Northern province of Brazil, in S. America, bounded by the river Grande on the N. the Atlantic on the E. the Tamtrack on the S. and Figuares on the W. it belongs to the Portuguese, who took it from the French in 1584. The soil is fertile, and abounds in sugar canes, Brazil wood, cotton, tobacco, cattle, &c.

(2.) PARAIBA, a river in the above province, which runs into the Atlantic, 21 miles below the city N° 3. It is navigable a great way above it. Its mouth is defended by three forts.

(3.) PARAIBA, the capital of the above province, is seated on the S. bank of the river (N° 2.) 9. miles from the sea. It was fortified with ramparts, in 1633; and has many stately houses with marble pillars; besides large ware-houses and magazines. It has a great trade in sugar, tobacco, &c. It was taken by the Dutch in 1635, but soon retaken. It is 60 miles N. of Fernambuco. Lon. 49. 53. W. Lat. 7. 15. S.

PARAKIN, a town of European Turkey, in Servia; 32 miles NNE. of Nissa, and 38 SSE. of Belgrade.

PARALAPUTTY, a town of Hindostan, in Mysore; 10 miles from Sankeridurgam.

PARALEIPOMENA, *n. s.* [Gr. from παραλειπω *to omit.*] in literature, a supplement of things omitted in a preceding work.

PARALEPSIS. See ORATORY, § 232.

* PARALLACTICAL. } *adj.* [from *parallax.*]
* PARALLACTICK. } Pertaining to a parallax.

(1.) * PARALLAX. *n. s.* [παραλλαξις.] The distance between the true and apparent place of the sun, or any star viewed from the surface of the earth.—

By what strange *parallax* or optick skill
Of vision multiply'd! *Milton.*

—Light moves from the sun to us in about 7 or 8 minutes, which distance is about 70,000,000 English miles, supposing the horizontal *parallax* of the sun to be about 12 seconds. *Newton.*

(2.) PARALLAX, in astronomy is otherwise defined, the difference between the places of any celestial objects as seen from the surface, and from the centre of the earth at the same instant. Let E. in *fig.* 6. *pl.* CCLXVI. represent the centre of the earth, O the place of an observer on its surface, whose visible horizon is OH, and true horizon EF: Now let ZDT be a portion of a great circle in the heavens, and A the place of any object in the visible horizon; join EA, and produce it to C; then C is the *true* place of the object, and H is its *apparent* place, and the angle CAH is the parallax; or, because the object is in the horizon, it is called the *horizontal parallax.* But OAE, the angle which the earth's radius subtends at the object, is equal to CAH: Hence the horizontal parallax of an object may be defined to be the angle which the earth's semidiameter subtends at that object. For the various methods hitherto proposed to find the quantity of the horizontal parallax of an object, see ASTRONOMY, § 522—541, inclusive. The whole effect of parallax is in a vertical direction: For the parallactic angle is in the plane passing through the observer and the earth's centre; which plane is necessarily perpendicular to the horizon, the earth being considered as a sphere. The more elevated an object is above the horizon, the less is the parallax, its distance from the earth's centre continuing the same. When the object is in the zenith, it has no parallax; but when in the horizon, its parallax is greatest. The horizontal parallax being given, the parallax at any given altitude may be found by the following rule: To the logarithmic cosine of the given altitude, add the log. sine of the horizontal parallax; the sum, rejecting 10 from the index, will be the log. sine of the parallax, in altitude. *Demonstration.* Let B be the plane of an object; produce OB, ED to F,

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F and D; then the angle BOZ will be the apparent altitude of the object, EEZ the true altitude, and OBE the parallax in altitude. Now, in the triangle AOE,

R : fine OAE : : EA : EO.

And in the triangle OBE,

BE (=EA) : EO : : fine BOE : fine OBE.

Hence R : cofine BOA : : fine OAE : fine OBE. As the two laft terms are generally fmall quantities, the arch may be fubftituted in place of its fine without any fenfible error. *Example.* Let the apparent altitude of the moon's centre be 39° 25′ and the moon's horizontal parallax 56′ 54″. Required the parallax in altitude?

Moon's apparent alt. 39° 25′ cofine 9·8879260
Moon's horizontal par. 56′ 54″ fine 8·2188186

Moon's par in altitude. 43′ 57″ fine 8·1067446

As the apparent place of an object is nearer the horizon than its true place, the parallax is therefore to be added to the apparent altitude, to obtain the true altitude. Hence alfo an object will appear to rife later and fooner. The fine of the parallax of an object is inverfely as its diftance from the earth's centre. *Demonftration.* Let A be the place of an object, and H the place of the fame object at another time, or that of another object at the fame inftant; join EH, then in the triangles AOE, HOE.

R : fine OAE :: AE : OE
fine OHE : R :: OE : EH;

Hence fine OHE : fine OAE : : AE : EH. The parallax of an object makes it appear more diftant from the meridian than it really is. *Demonft.* The true and apparent places of an object are in the fame vertical, the apparent place being lower than the true, and all vertieals meet at the zenith; hence the apparent place of an object is more diftant from the plane of the meridian than the true place. The longitude, latitude, right afcenfion, and declination of an object, are affected by parallax. The difference between the true and apparent longitudes is called the *parallax in longitude*; in like manner, the differences between the true and apparent latitudes, right afcenfions, and declinations, are called the *parallax in latitude*, *right afcenfion*, and *declination*, refpectively.—When the object is in the nonagefimal, the parallax in longitude is nothing, but that in latitude is greateft; and when the object is in the meridian, the parallax in right afcenfion vanifhes, and that in declination is a maximum. The apparent longitude is greater than the true longitude, when the object is eaft of the nonagefimal, otherwife lefs; and when the object is in the eaftern hemifphere, the apparent right afcenfion exceeds the true, but is lefs than the true right afcenfion when the object is in the weftern hemifphere. The apparent place of an object is more diftant from the elevated poles of the ecliptic and equator than the true place; hence, when the latitude of the place and elevated pole of the ecliptic are of the fame name, the apparent latitude is lefs than the true latitude, otherwife greater; and the apparent declination will be greater than the true declination, according as the latitude of the place and declination of the object are of the fame or of a contrary denomination. The parallaxes in longitude, latitude, right afcenfion, and declination, in the fpheroidal hypothefis, may be found by the following formulæ; in which *L* repreſents the latitude of the place, diminiſhed by the angle contained between the vertical and radius of the given place; *P* the horizontal parallax at that place; *a* the altitude of the nonagefimal at the given inftant; *d* the apparent diftance of the object from the nonagefimal; *l* the true and apparent latitudes of the object; *D* the true and apparent declinations refpectively; and *m* its apparent diftance from the meridian. Then par. in long. = P. fine *a*. fine *d*. fecant *l*, to radius unity; and par. in lat. = P. cofine *a*. cofine *a*. cofine ± fine *d*. fine *a*. fine *l*. The ſign — is uſed when the apparent diſtance of the object from the nonagefimal and from the elevated pole of the ecliptic are of the ſame affection, and the ſign + if of different affection. If the greateſt preciſion be required, the following quantity 0·0000121216 par. long. ², fine 2 *l*, is to be applied to the parallax in latitude found as above, by addition or ſubtraction, as the true diſtance of the object from the elevated pole of the ecliptic is greater or leſs than 90°. Again, par. in right aſcen. = P. cofine L. fine *m*. fecant D, to radius unity; and par. in declination = P. fine L. cofine *s* ± P cofine L. fine *s*, cofine *m*. The upper or lower ſign is to be uſed, according as the diſtance of the object from the meridian and from the elevated pole of the equator are of the ſame or different affection. Part ſecond of par. in declination ± 0·0000010121416 par. in right aſcen. ², fine 2 D; which is additive to, or ſubtractive from part firſt of the parallax in declination, according as the true diſtance of the object from the elevated pole of the equator is greater or leſs than 90°.

(3.) PARALLAX is alſo uſed to denote the change of place in an object ariſing from viewing it obliquely with reſpect to another object. Thus the minute hand of a watch is ſaid to have a parallax when it is viewed obliquely; and the difference between the inſtants ſhown by it, when viewed directly and obliquely, is the quantity of parallax in time.

(4.) PARALLAX OF THE EARTH'S ANNUAL ORBIT, is the difference between the places of a planet as ſeen from the ſun and earth at the ſame inſtant. The difference between the longitudes of the planet as ſeen from the ſun and earth is called the *parallax in longitude*; and the difference between its latitudes is the *parallax in latitude*.

(5.) PARALLAX OF THE MOON. See ASTRONOMY, *Index*. There is alſo a curious paper in the firſt volume of Aſiatic Reſearches, p. 310, &c. on the ſame ſubject, to which we refer our readers.

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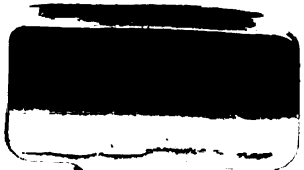

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